

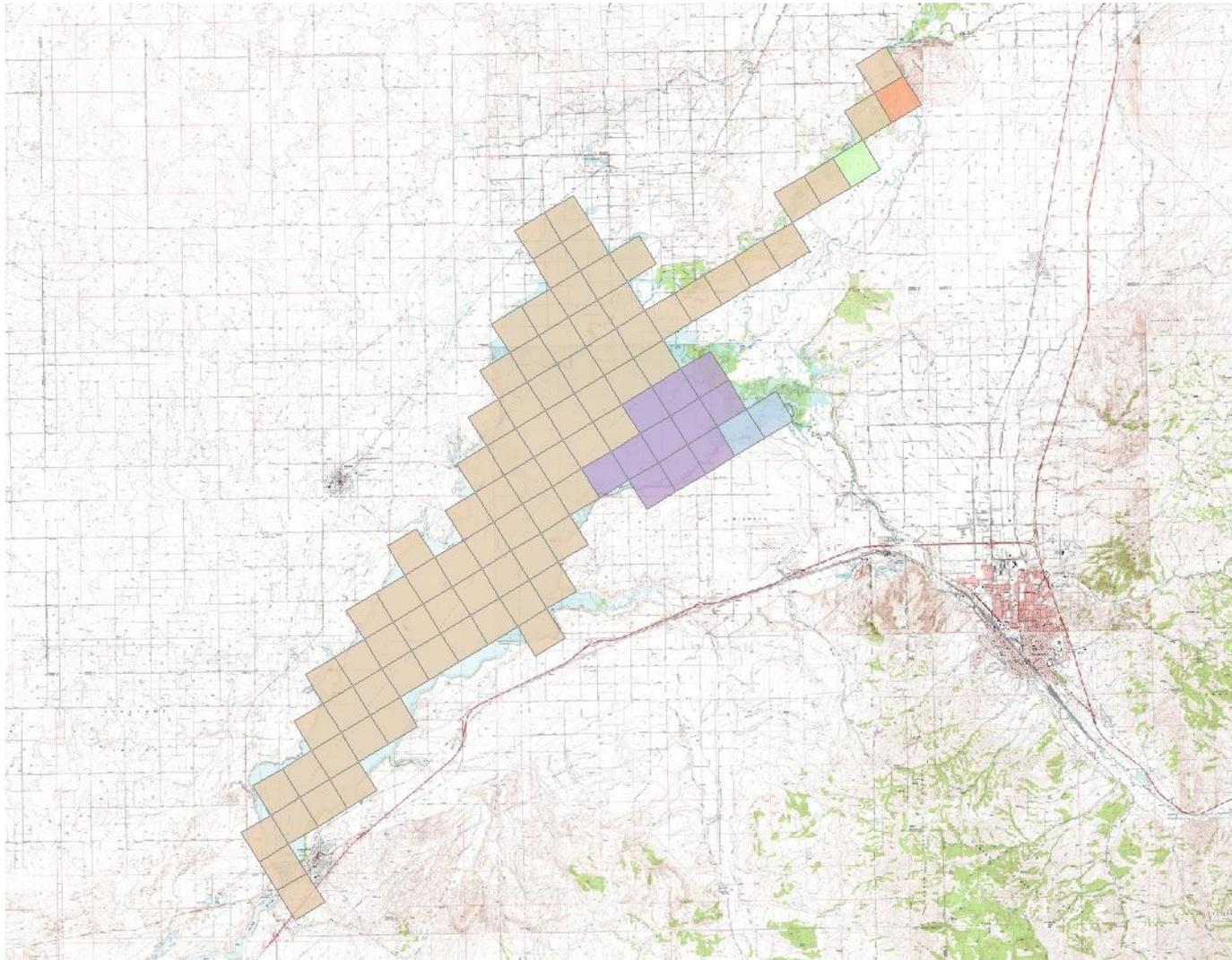


Potential subreach targets for near Blackfoot to Neeley reach, ESPAM2.2

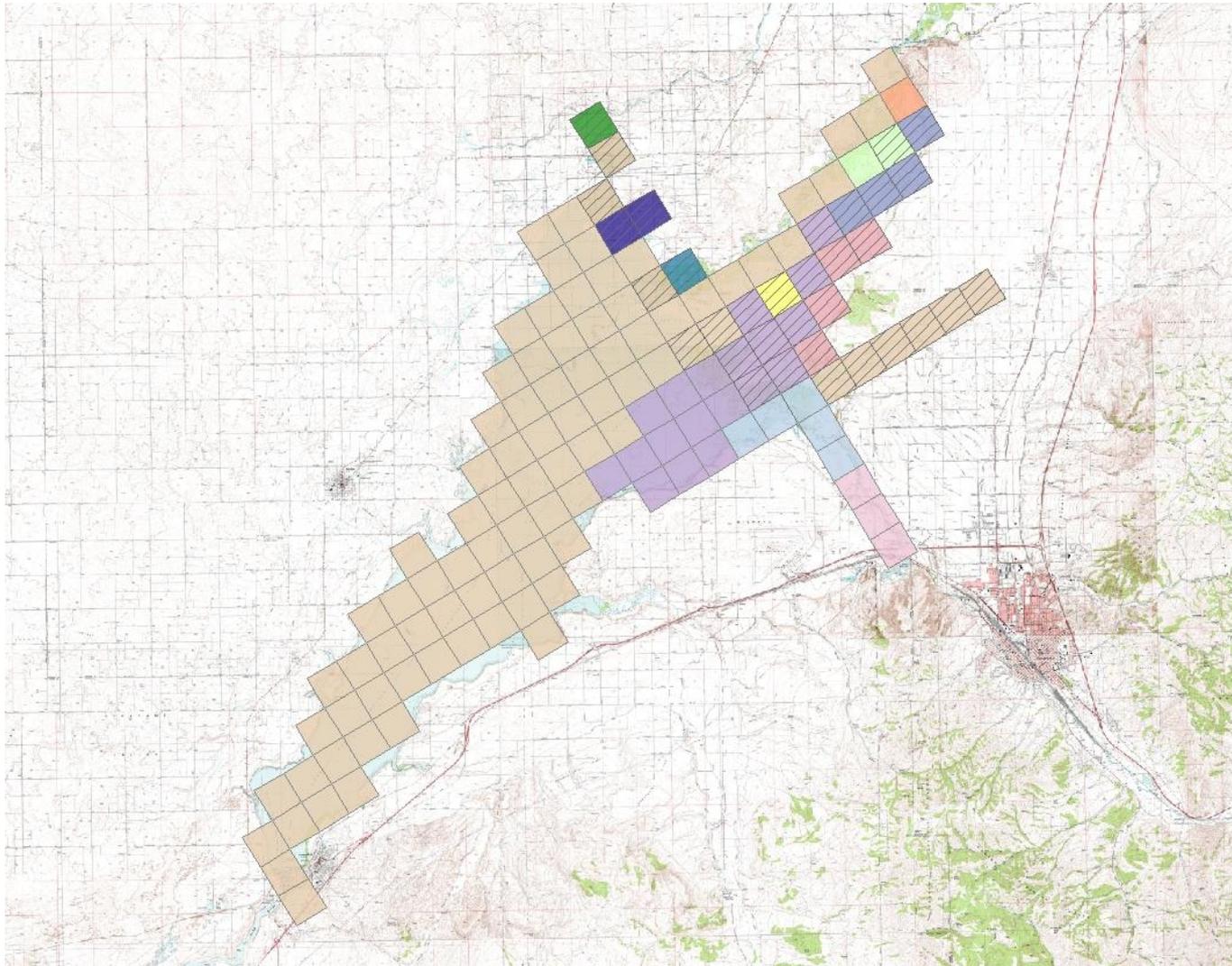
Presented by Jennifer Sukow

January 25, 2017

ESPAM2.1 Blackfoot to Neeley reach

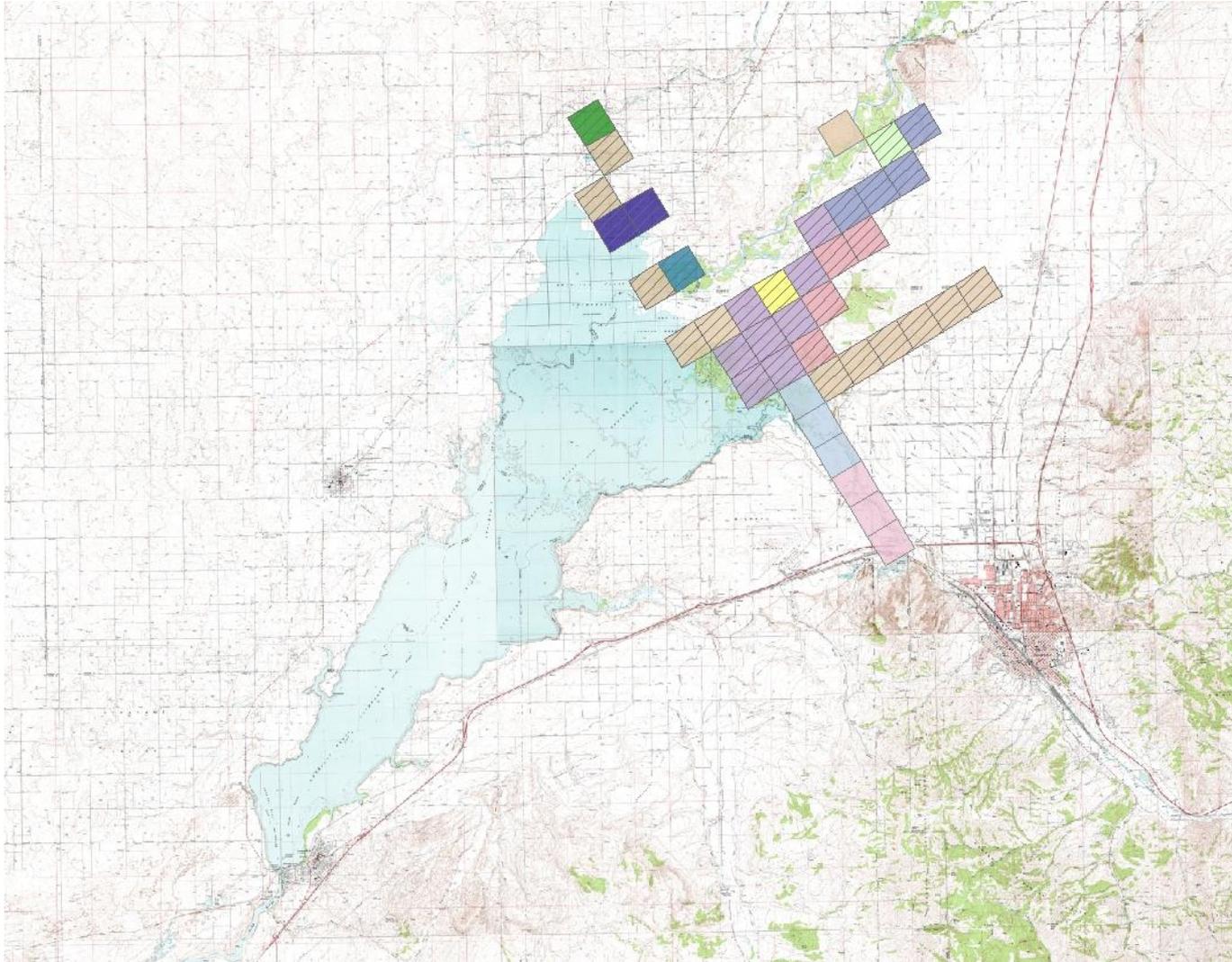


Proposed near Blackfoot to Neeley reach

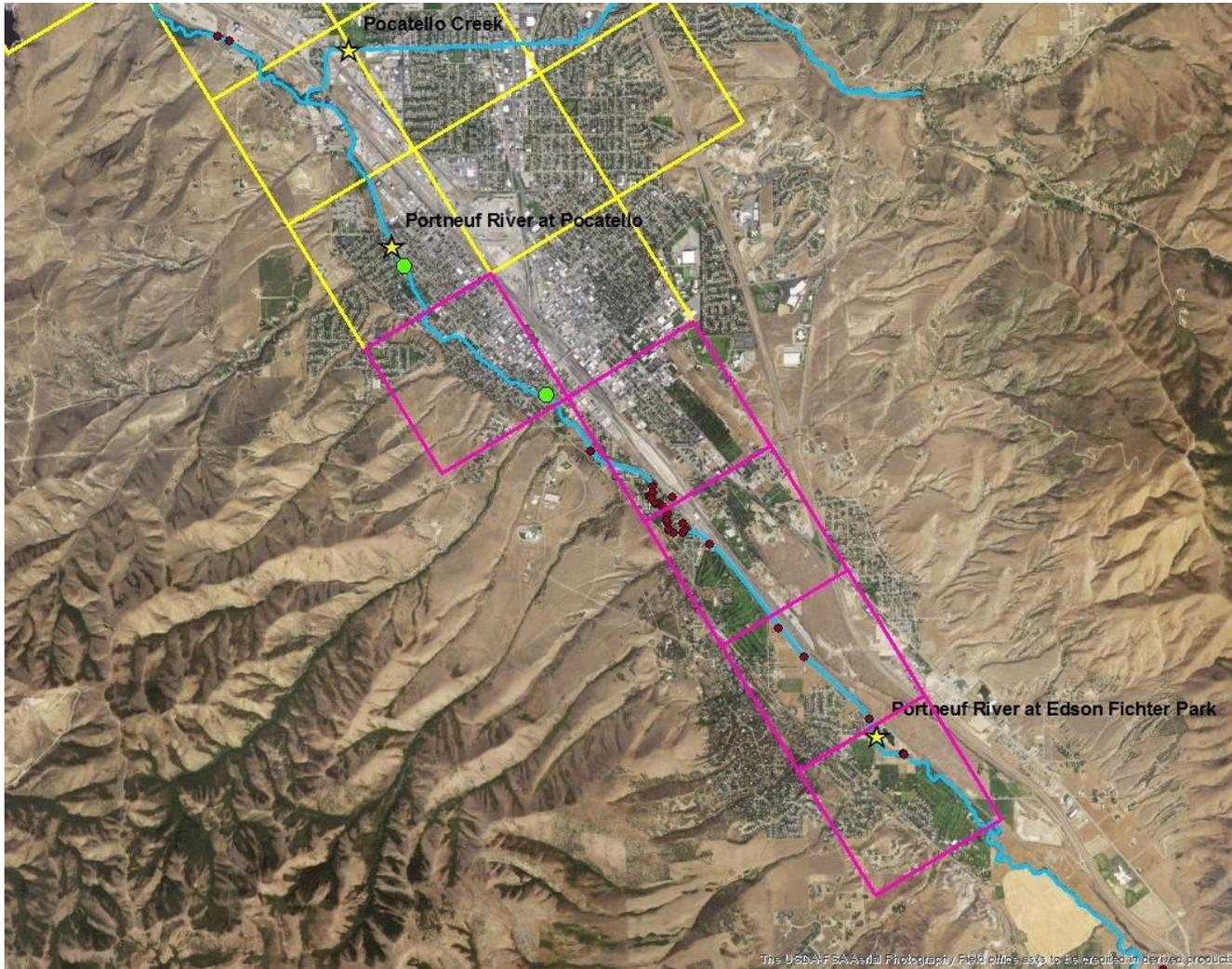


- Add river boundary conditions to additional cells to represent aquifer discharge to near Blackfoot to Neeley reach
- With exception of Portneuf River, most added river cells will have Stage = Rbot during all stress periods
- 11 potential subreach targets

Proposed additions to Blackfoot to Neeley reach



Portneuf River, Fichter to Pocatello

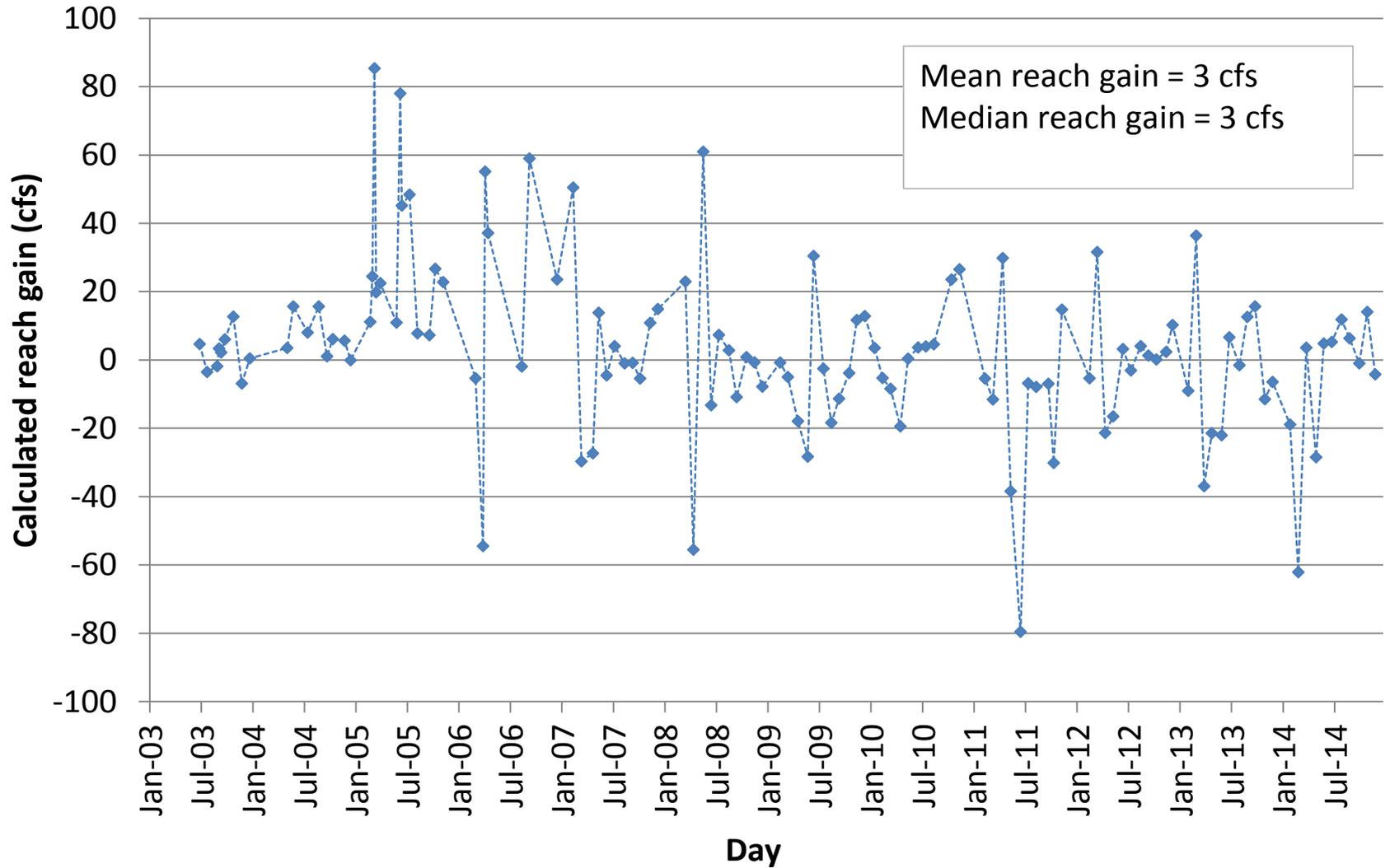


- DEQ measures at Fichter approx once a month
- Continuous USGS gage at Pocatello
- Unmeasured irrigation diversions of up to 1.46 cfs
- Gain/loss not significant, exceeded by noise





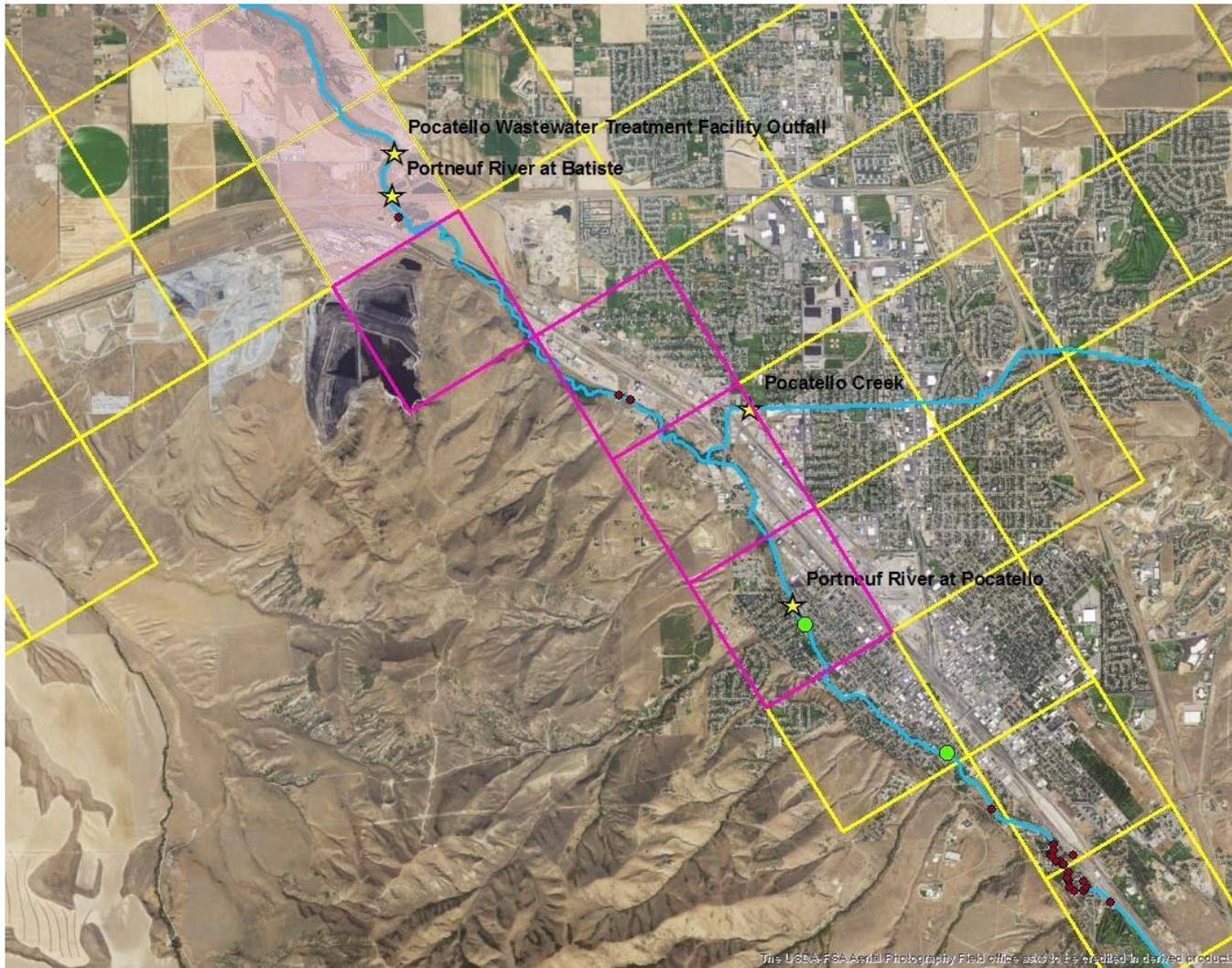
Portneuf River, Fichter to Pocatello



Portneuf River, Fichter to Pocatello

- Options for discussion
 1. Do not add river boundary condition to model cells along this reach. Assume interaction between aquifer and river is insignificant in this reach.
 2. Add river boundary condition to model cells along this reach and calibrate using calculated reach gain target.

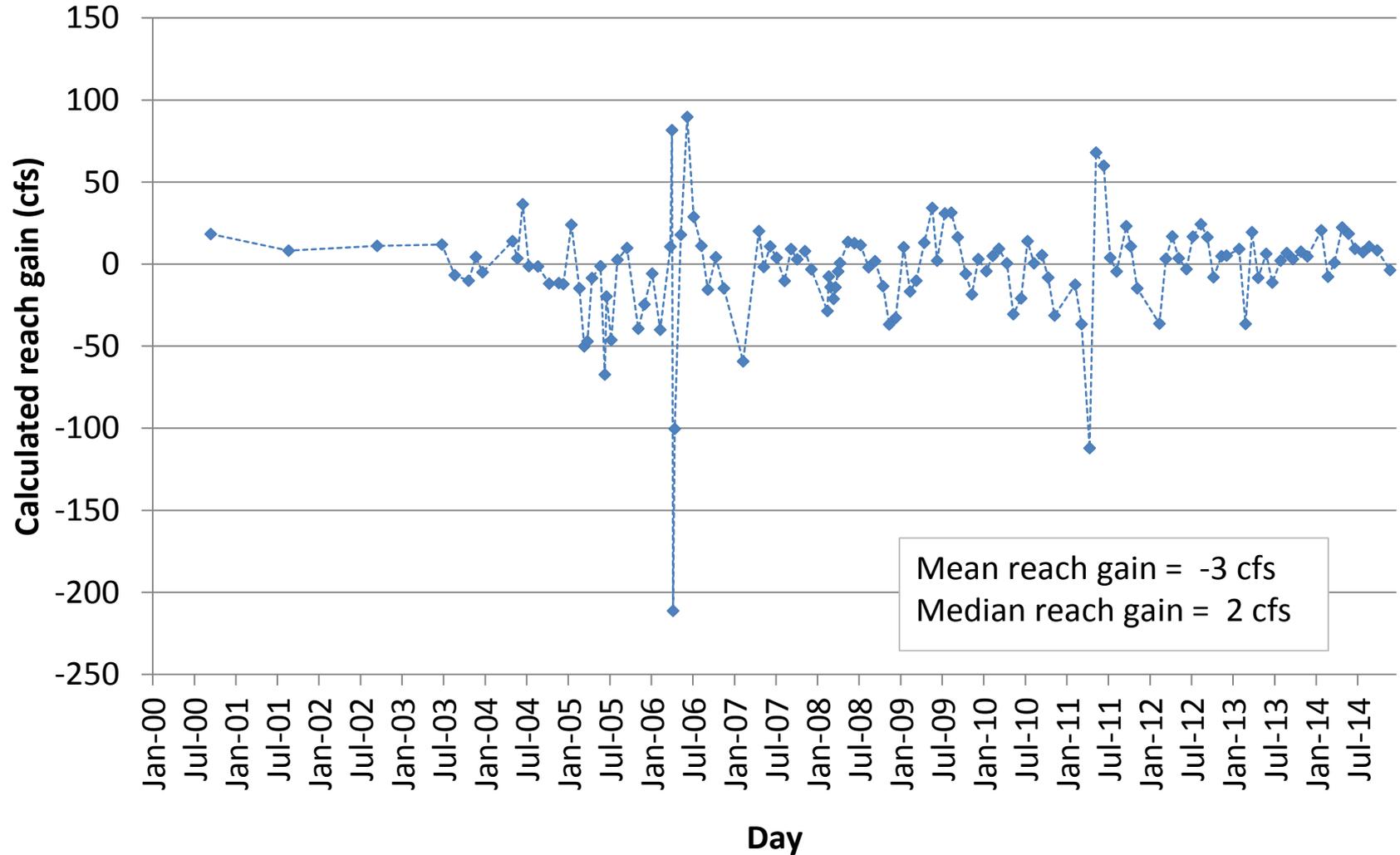
Portneuf River, Pocatello to Batiste



- Continuous USGS gage at Pocatello
- DEQ measures at Batiste approx once a month
- Pocatello Creek inflow gaged by IDWR beginning 2011
- Unmeasured irrigation diversions of up to 3.32 cfs
- Gain/loss not significant



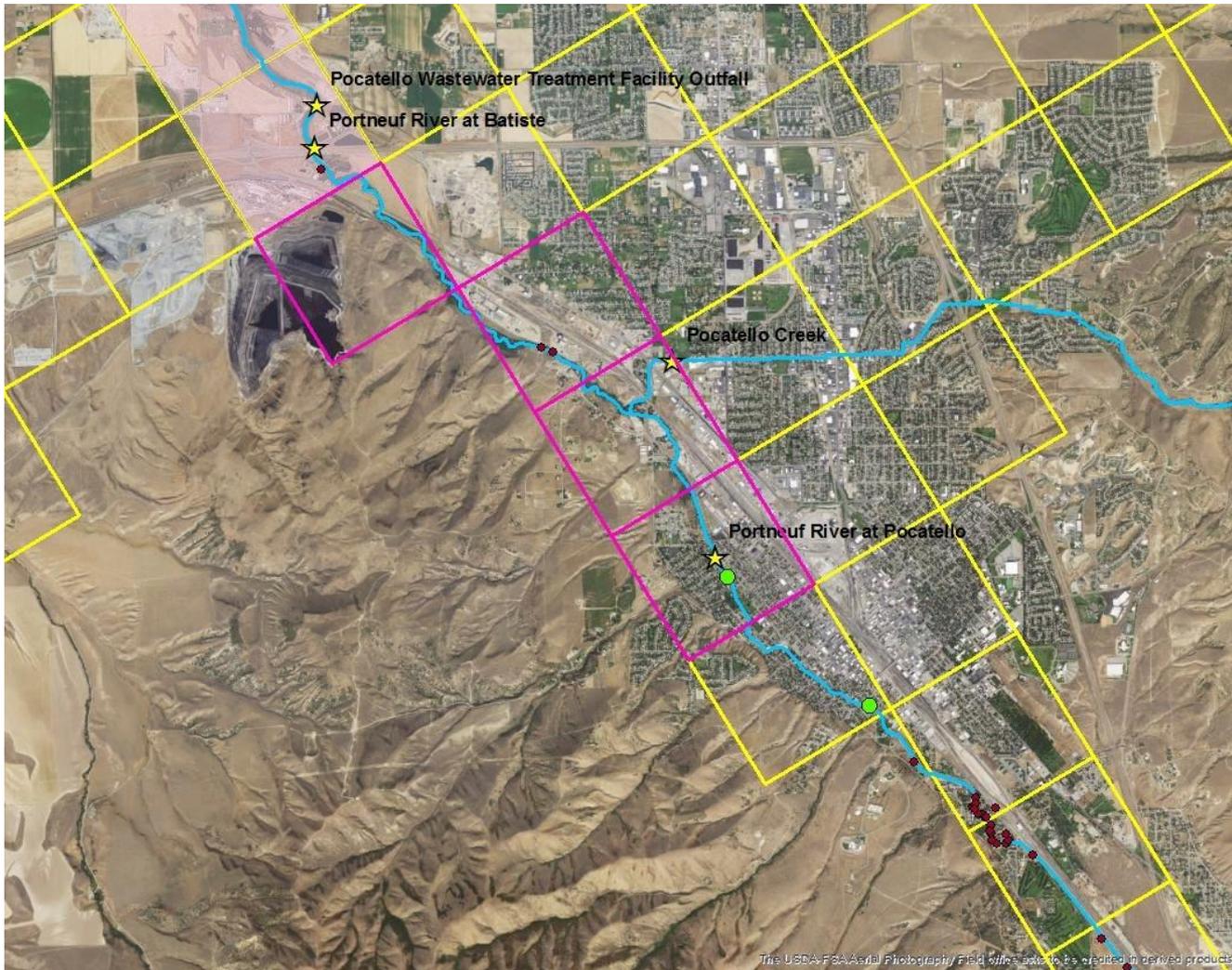
Portneuf River, Pocatello to Batiste



Portneuf River, Pocatello to Batiste

- Options for discussion
 1. Do not add river boundary condition to model cells along this reach. Assume interaction between aquifer and river is insignificant in this reach.
 2. Add river boundary condition to model cells along this reach and calibrate using calculated reach gain target.

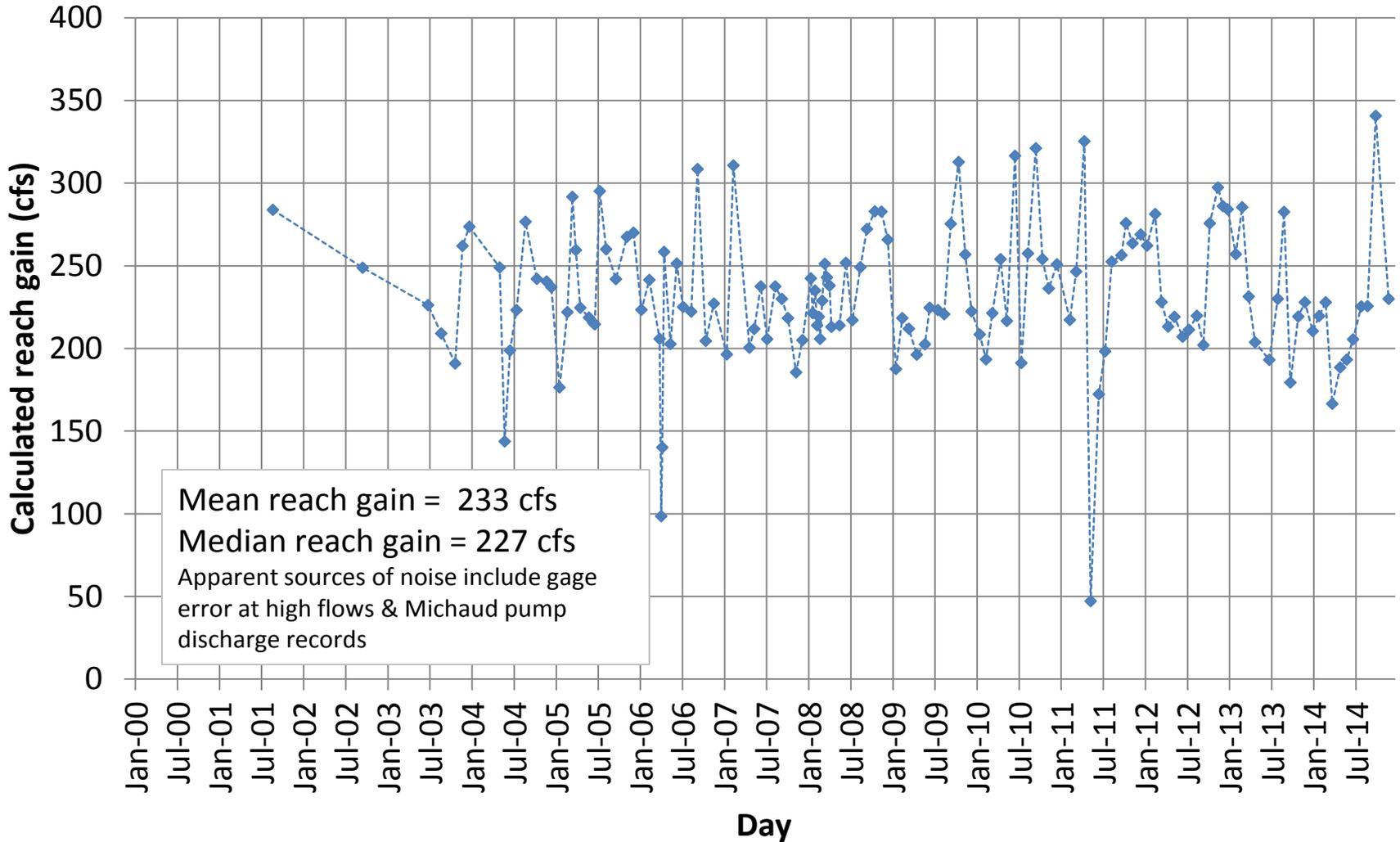
Portneuf River, Batiste to nr Tyhee



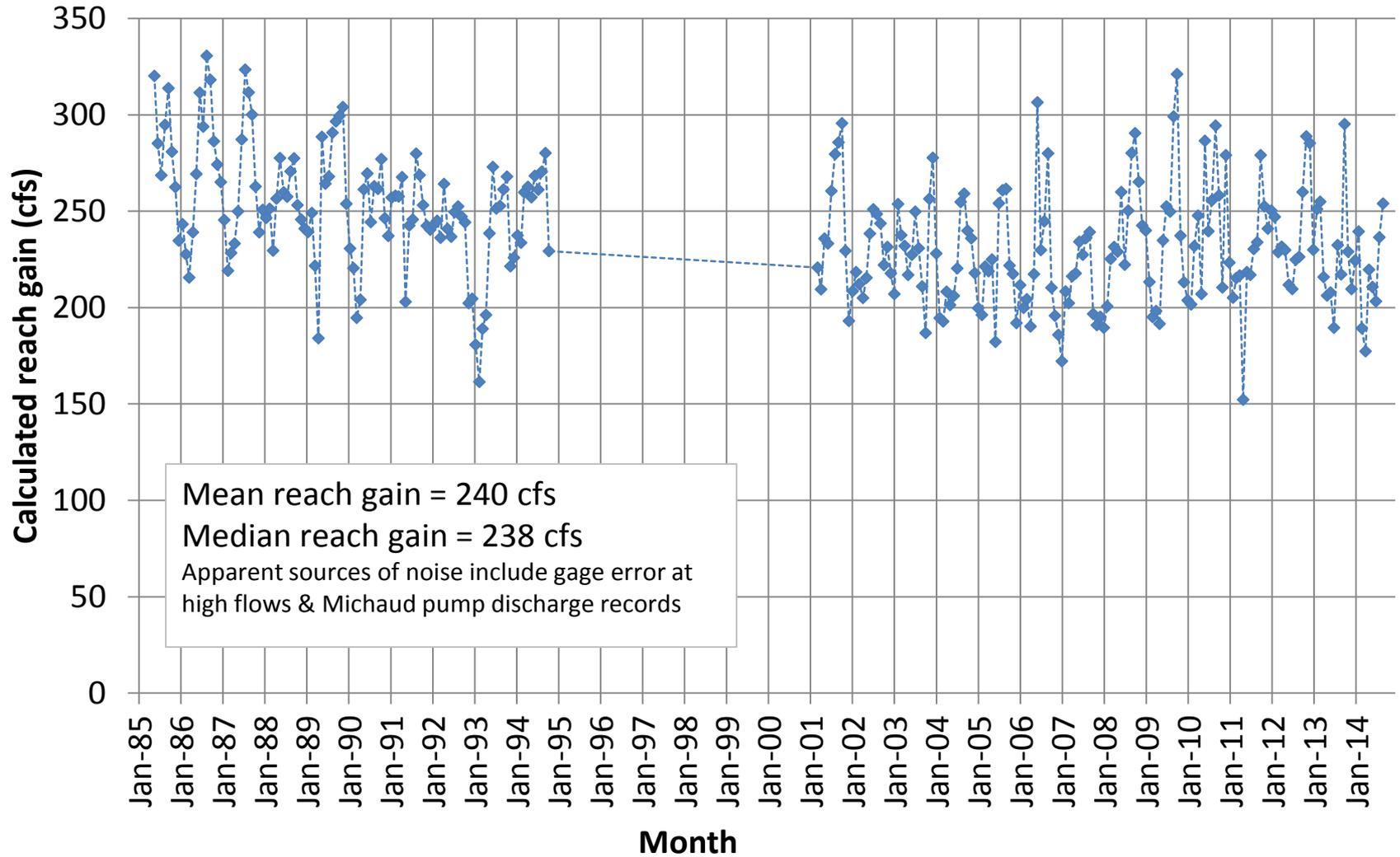
- DEQ measures at Batiste approx once a month
- Continuous USGS gage at nr Tyhee
- City WWTP discharge
- Fort Hall Michaud Pump diversion, WD01
- Gaining reach



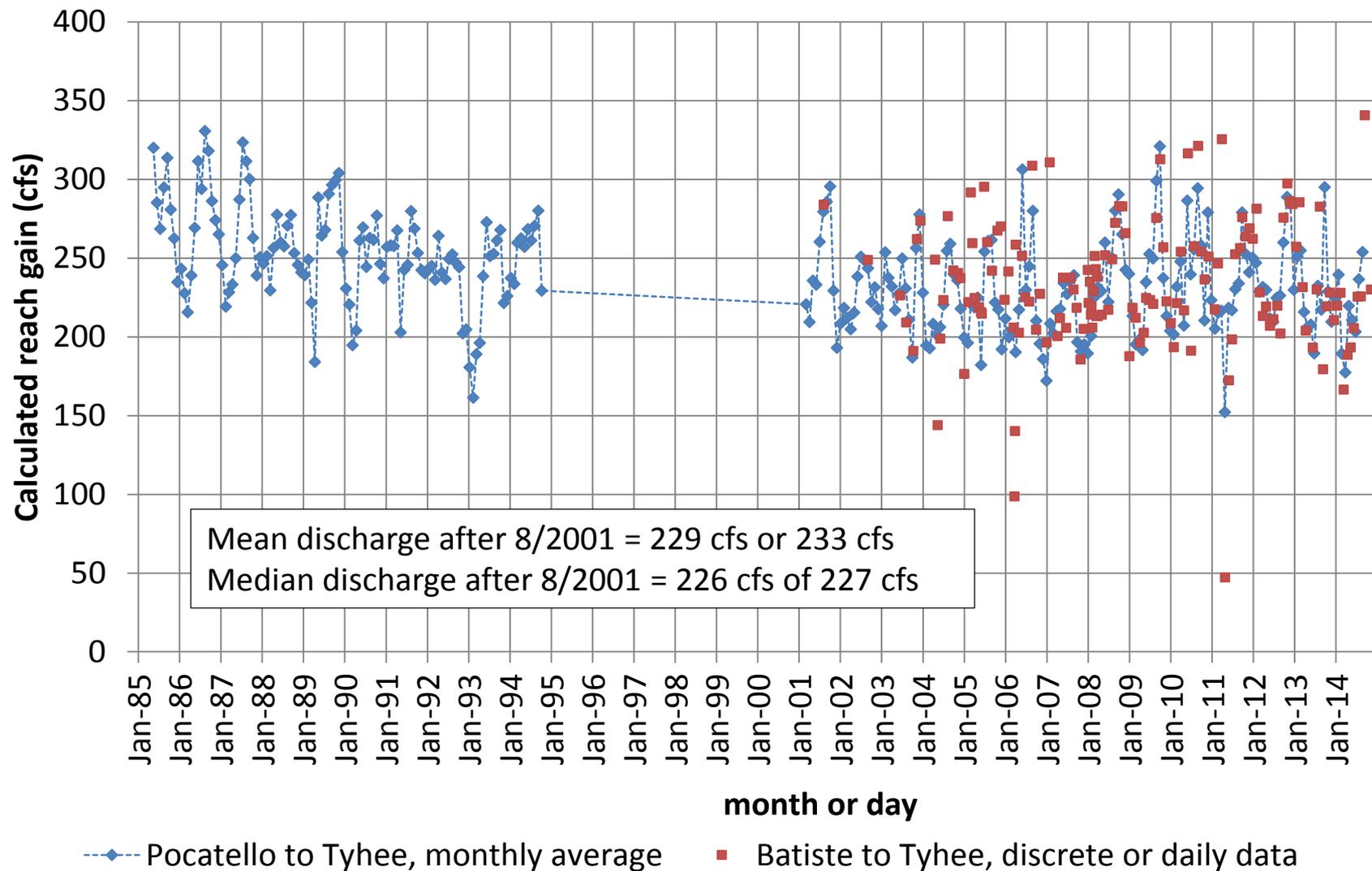
Portneuf River, Batiste to nr Tyhee



Portneuf River, Pocatello to nr Tyhee



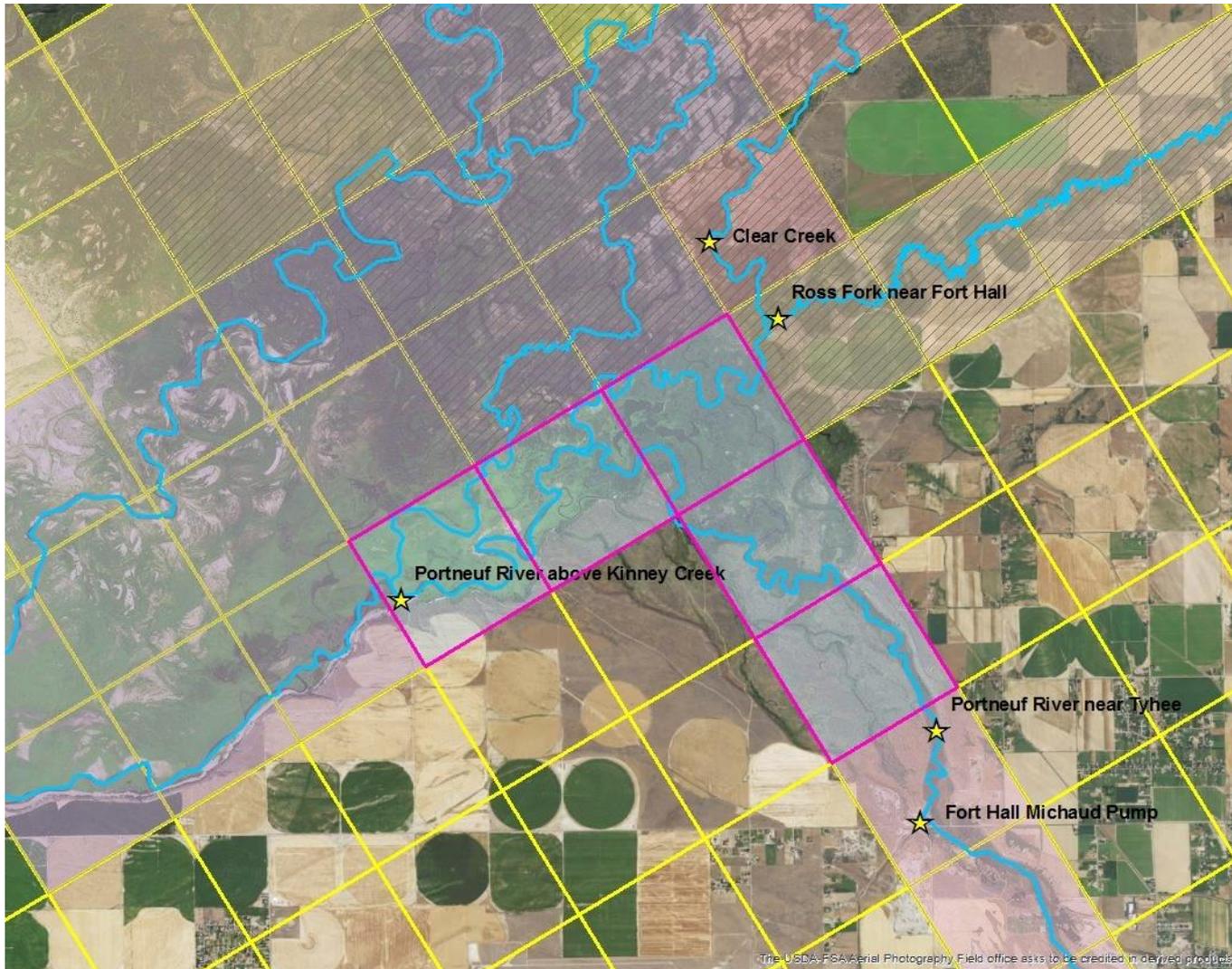
Portneuf River, Pocatello/Batiste to nr Tyhee



Portneuf River, Batiste to nr Tyhee

- Options for discussion
 1. Use only Pocatello to nr Tyhee average monthly reach gain as calibration target for Batiste to nr Tyhee. Target has longer period of record and less noise because both upstream and downstream gages are continuous-recording stations. Gain/loss between Pocatello gage and Batiste site is insignificant. Model cells upstream of Batiste would not have river boundary conditions.
 2. Use both Batiste to nr Tyhee and Pocatello to nr Tyhee reach gain targets. Batiste to nr Tyhee target has shorter record and more noise because of discrete measurements. Any advantage to using?

Portneuf River, nr Tyhee to abv Kinney Creek



- Continuous USGS gage at nr Tyhee

- Shoshone Bannock Tribes measure abv Kinney Creek with IDWR once in fall beginning in 2012

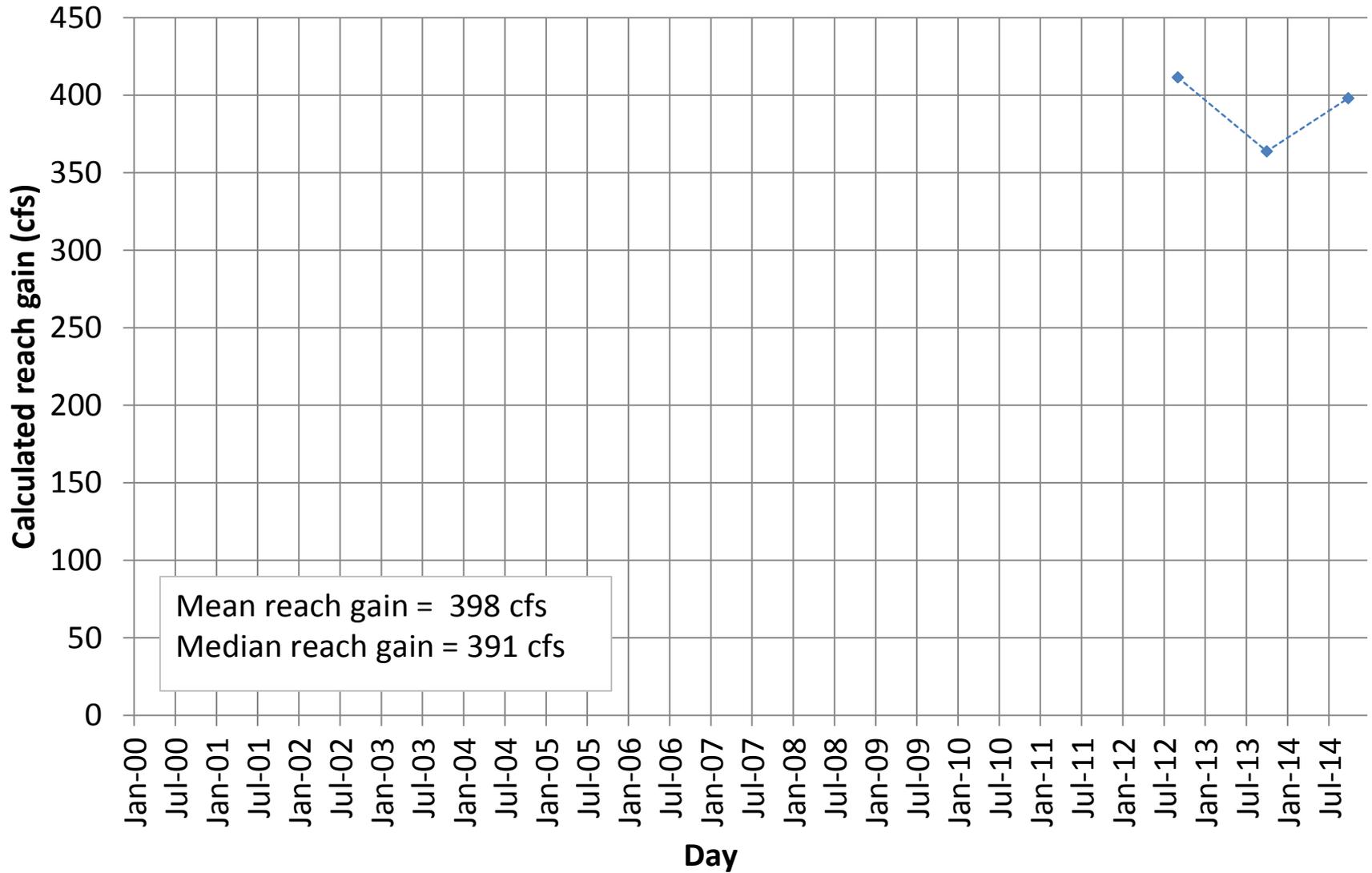
- No diversions

- Shoshone Bannock Tribes measure inflow from Clear Creek and return flow

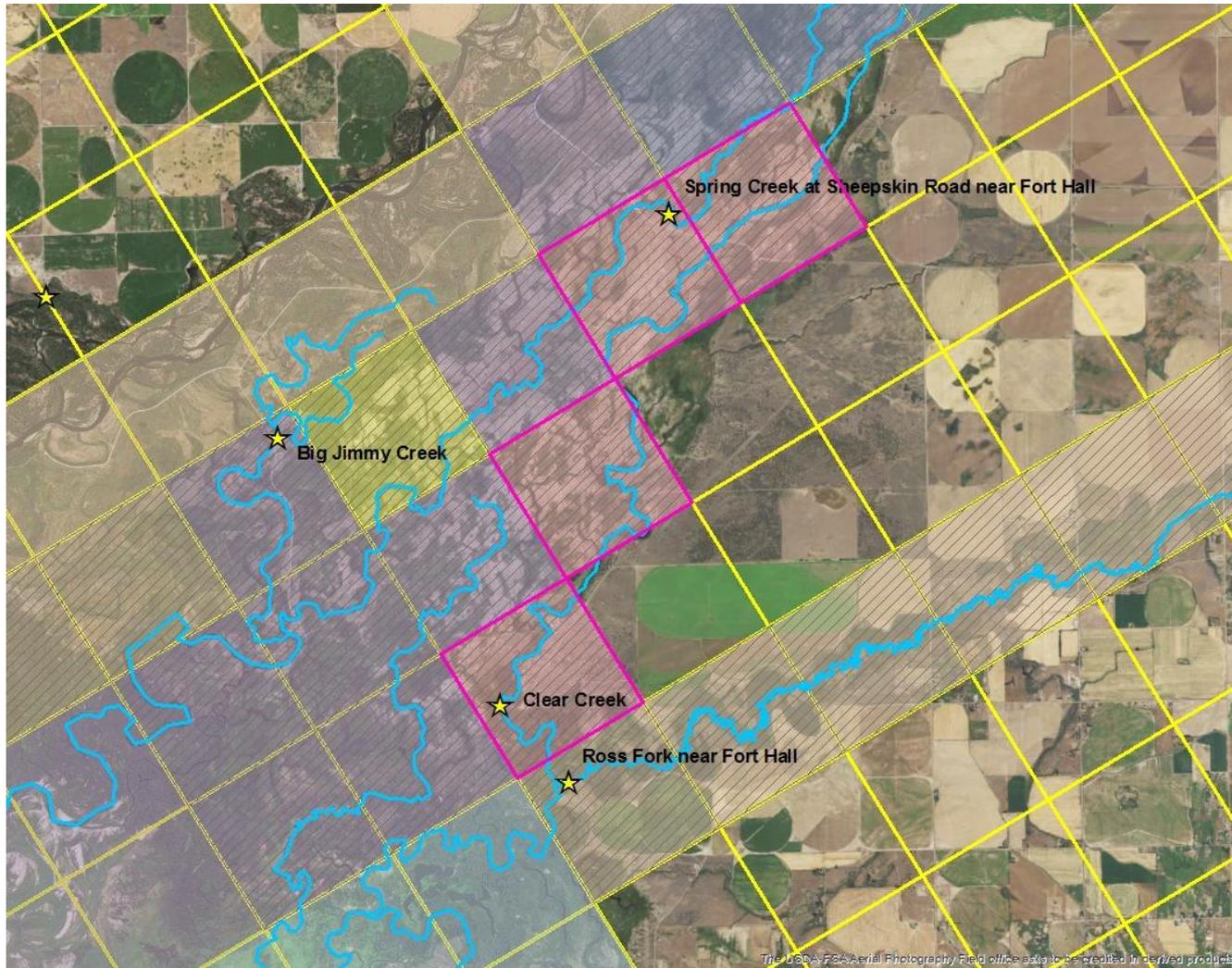
- Ross Fork measured by USGS, 1985-1994

- Gaining reach

Portneuf River, nr Tyhee to abv Kinney Creek

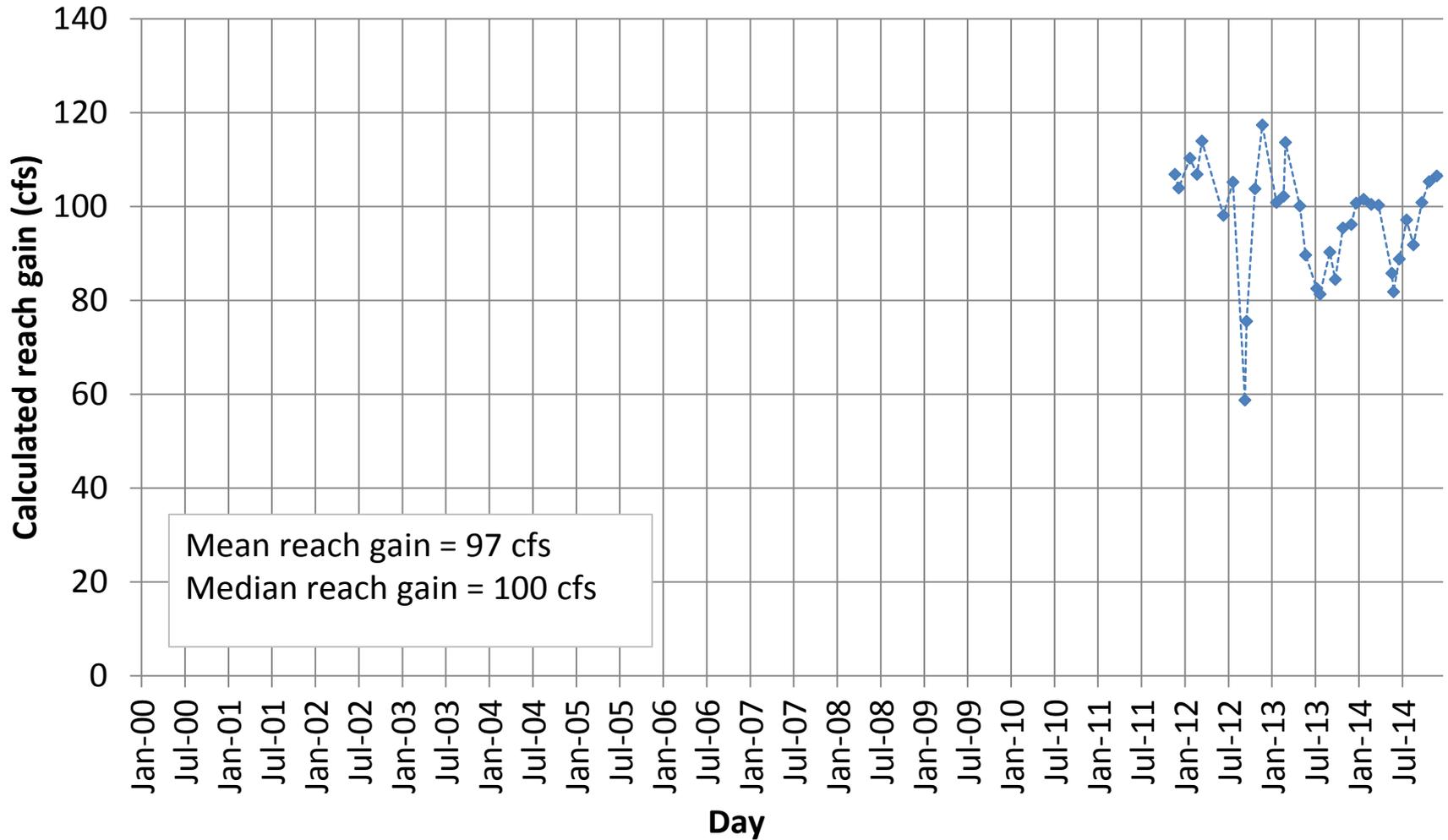


Portneuf River, Clear Creek abv Ross Fork

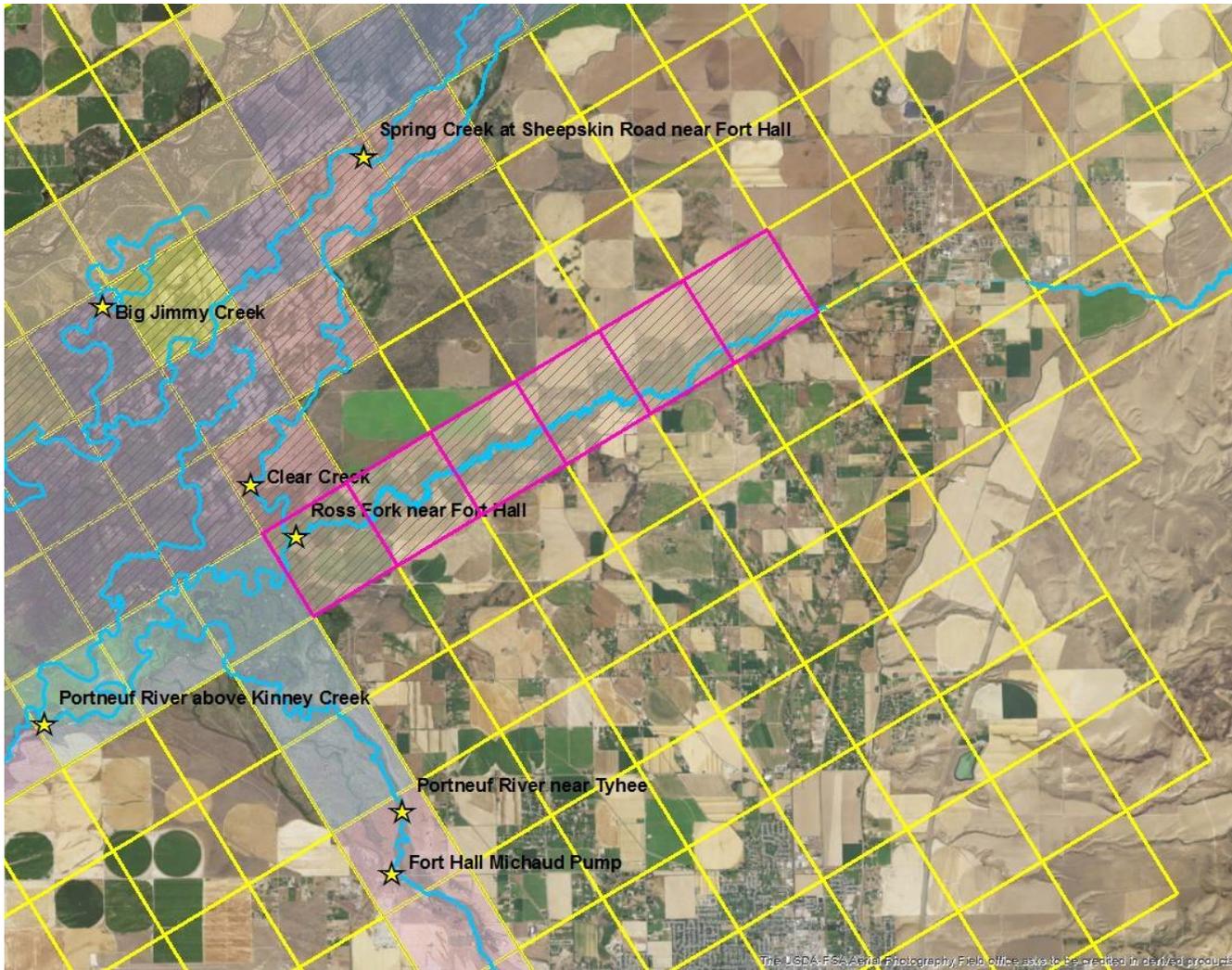


- Shoshone Bannock Tribes measure Clear Creek and return flow
- Gaining reach

Portneuf River, Clear Creek abv Ross Fork



Portneuf River, Ross Fork



- Ross Fork measured by USGS, 1985-1994

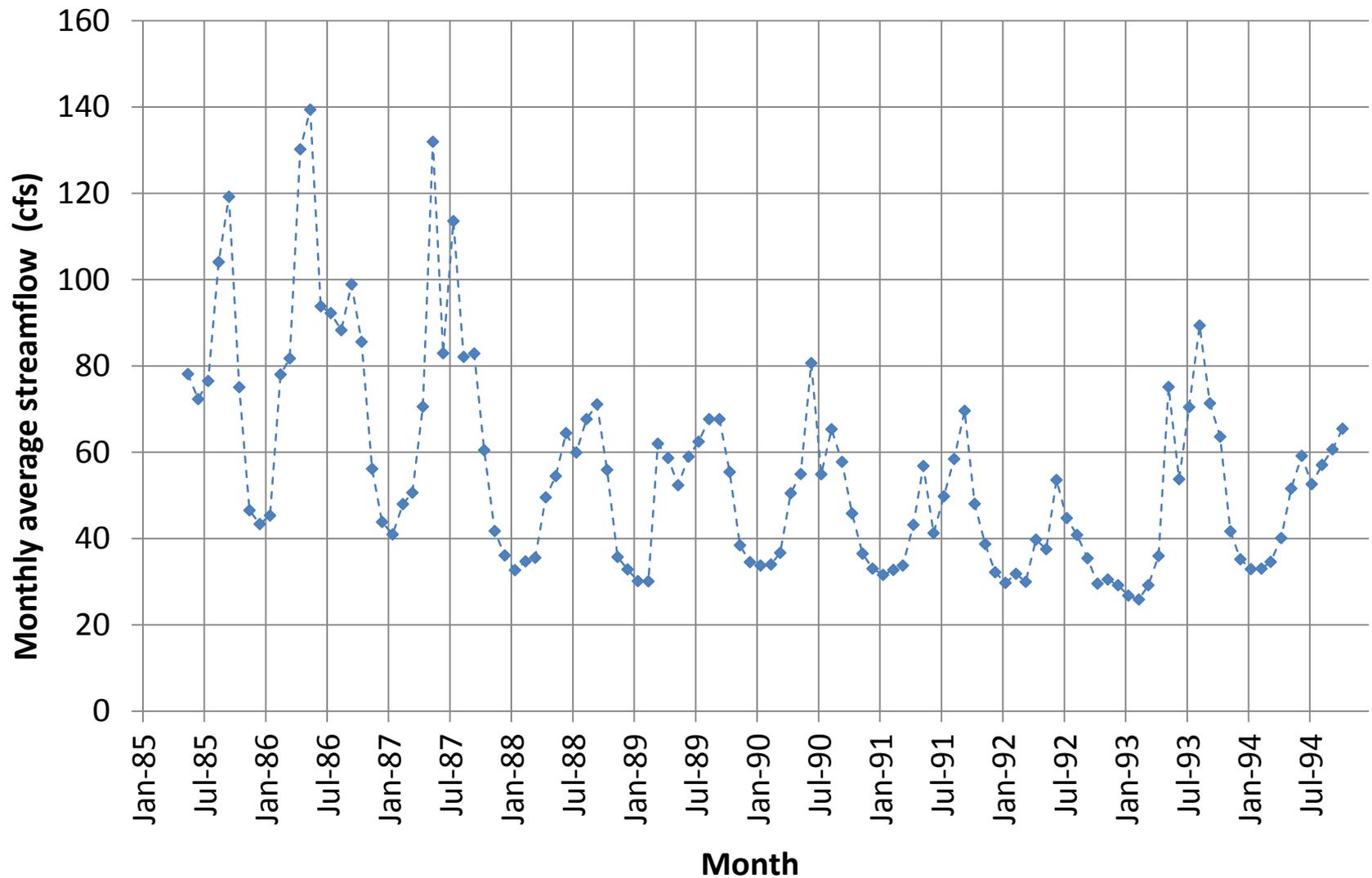
- Gaining reach

- Streamflow upstream of springs not measured, insufficient data to calculate reach gain

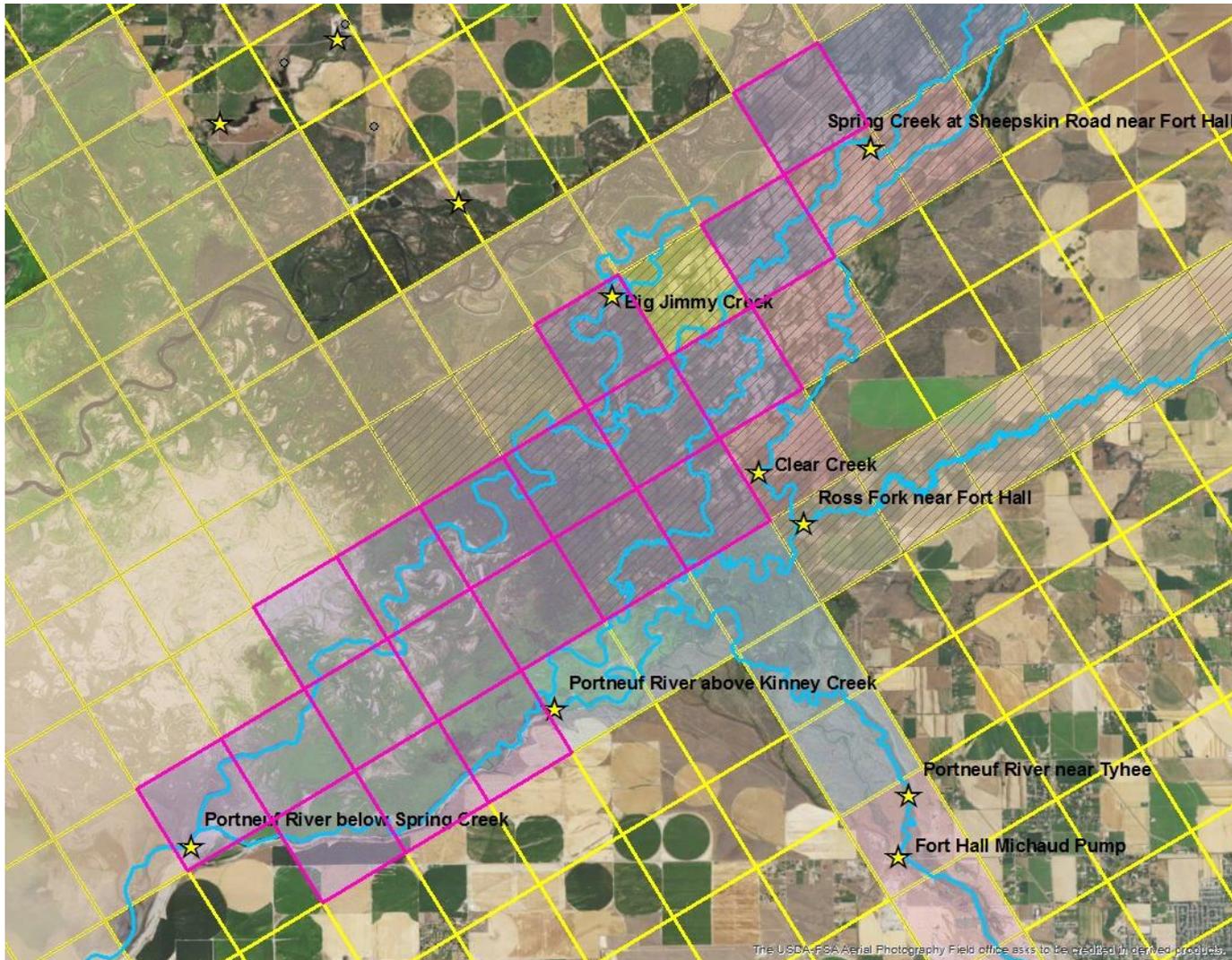
- Gage site added on upper Ross Fork near Blackfoot in fall 2016

- Two return flow gages may be added in 2017

Portneuf River, Ross Fork, USGS gage data



Portneuf River, abv Kinney Creek to blw Spring Creek

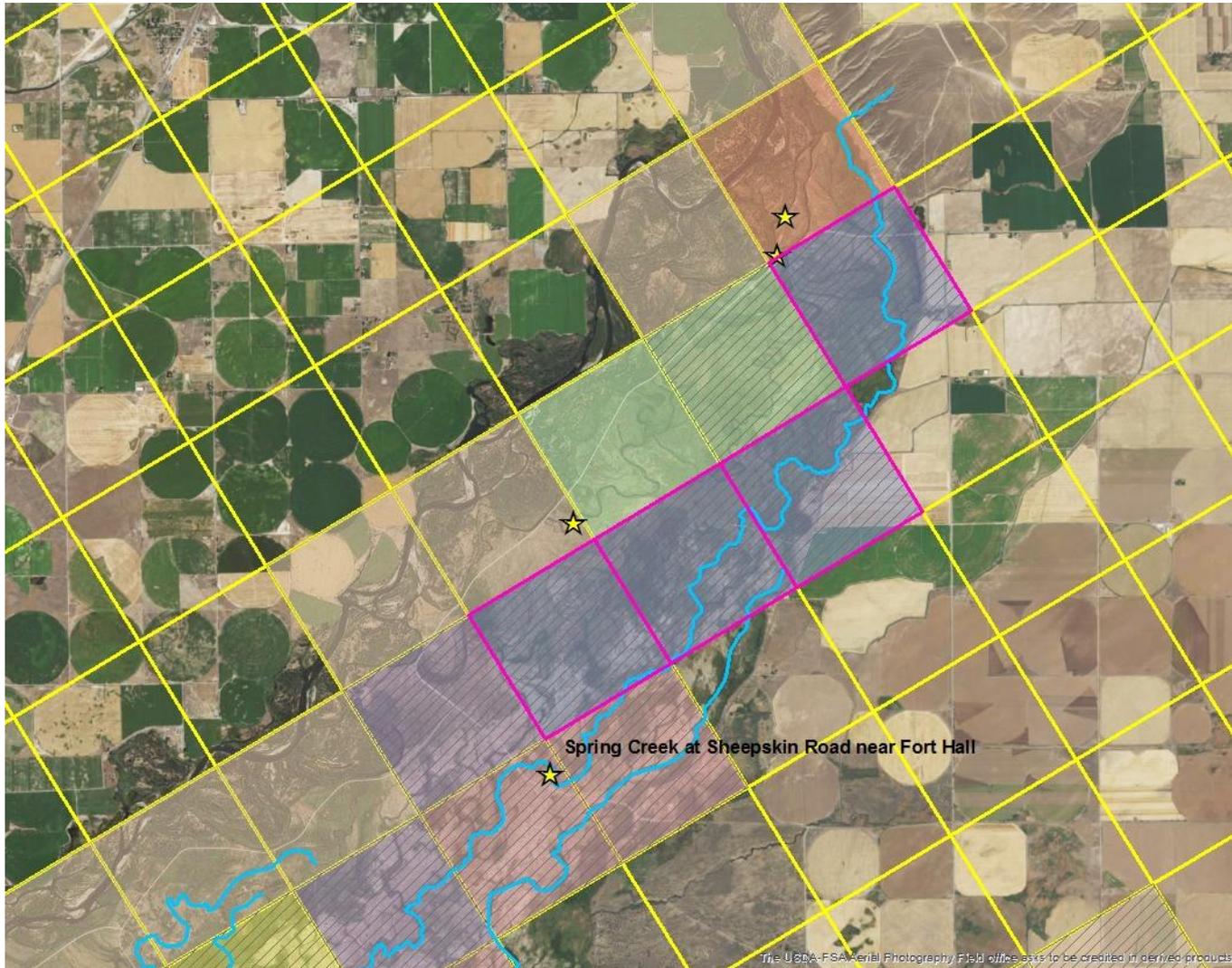


- Shoshone Bannock Tribes measure abv Kinney Creek and blw Spring Creek with IDWR once a year in fall beginning in 2012
- No diversions
- Continuous USGS gage on Spring Creek at Sheepskin Rd
- Shoshone Bannock Tribes measure inflow from Big Jimmy Creek
- Gaining reach

Portneuf River, abv Kinney Creek to blw Spring Creek

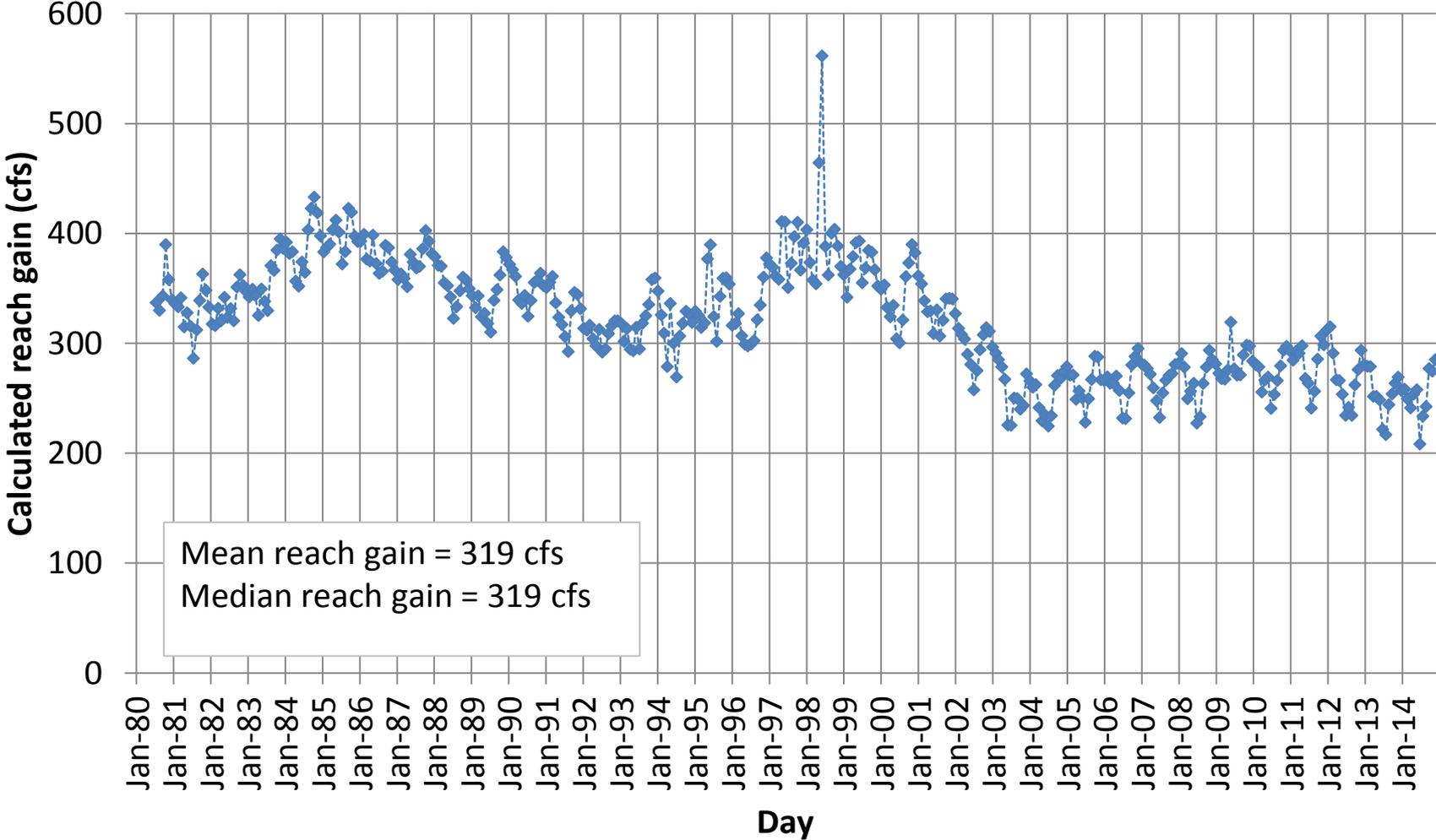


Portneuf River, Spring Creek abv Sheepskin Rd

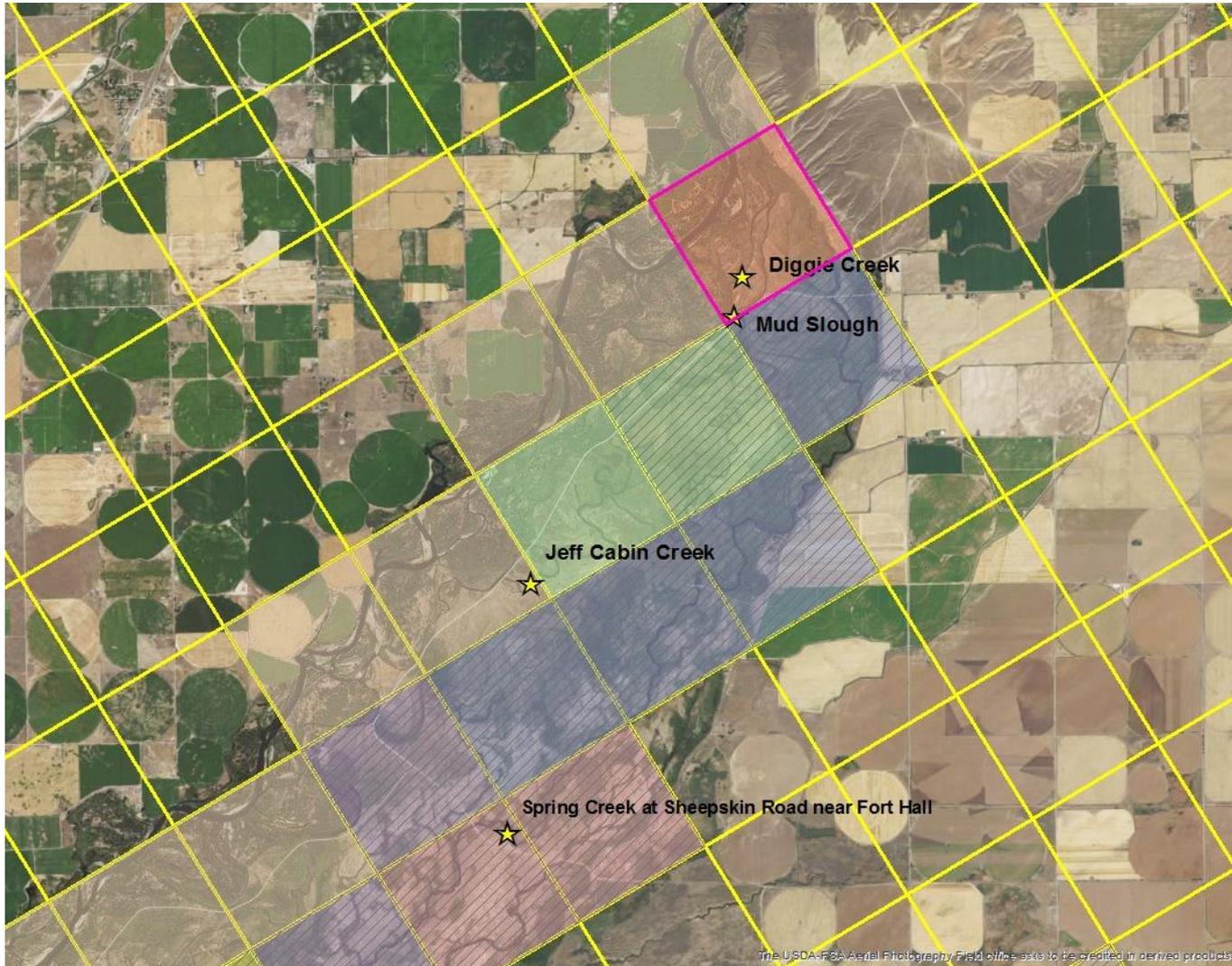


- Continuous USGS gage on Spring Creek at Sheepskin Rd
- Shoshone Bannock Tribes measure return flow
- Gaining reach

Portneuf River, Spring Creek abv Sheepskin Rd

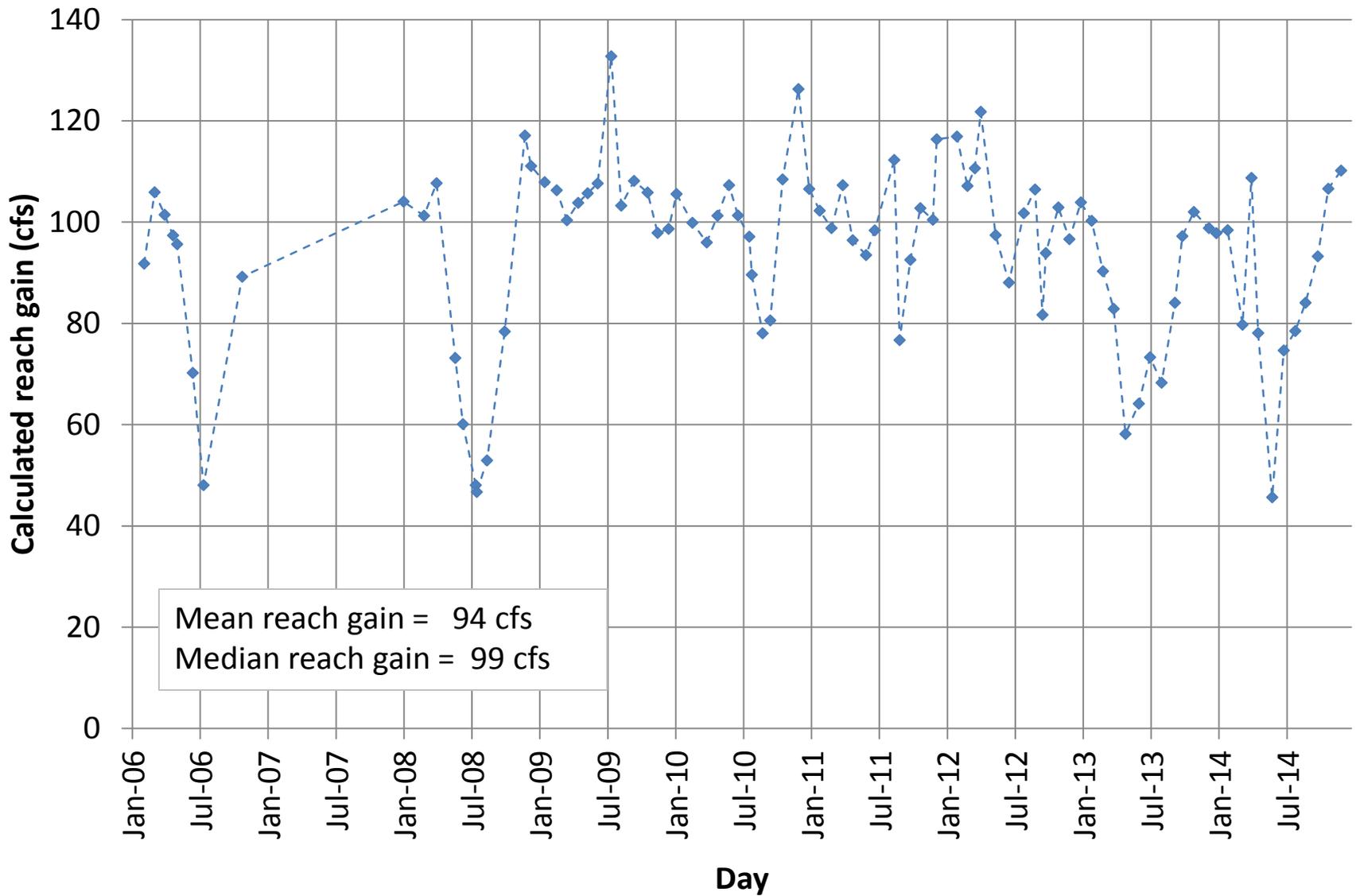


Diggie Creek and Mud Slough

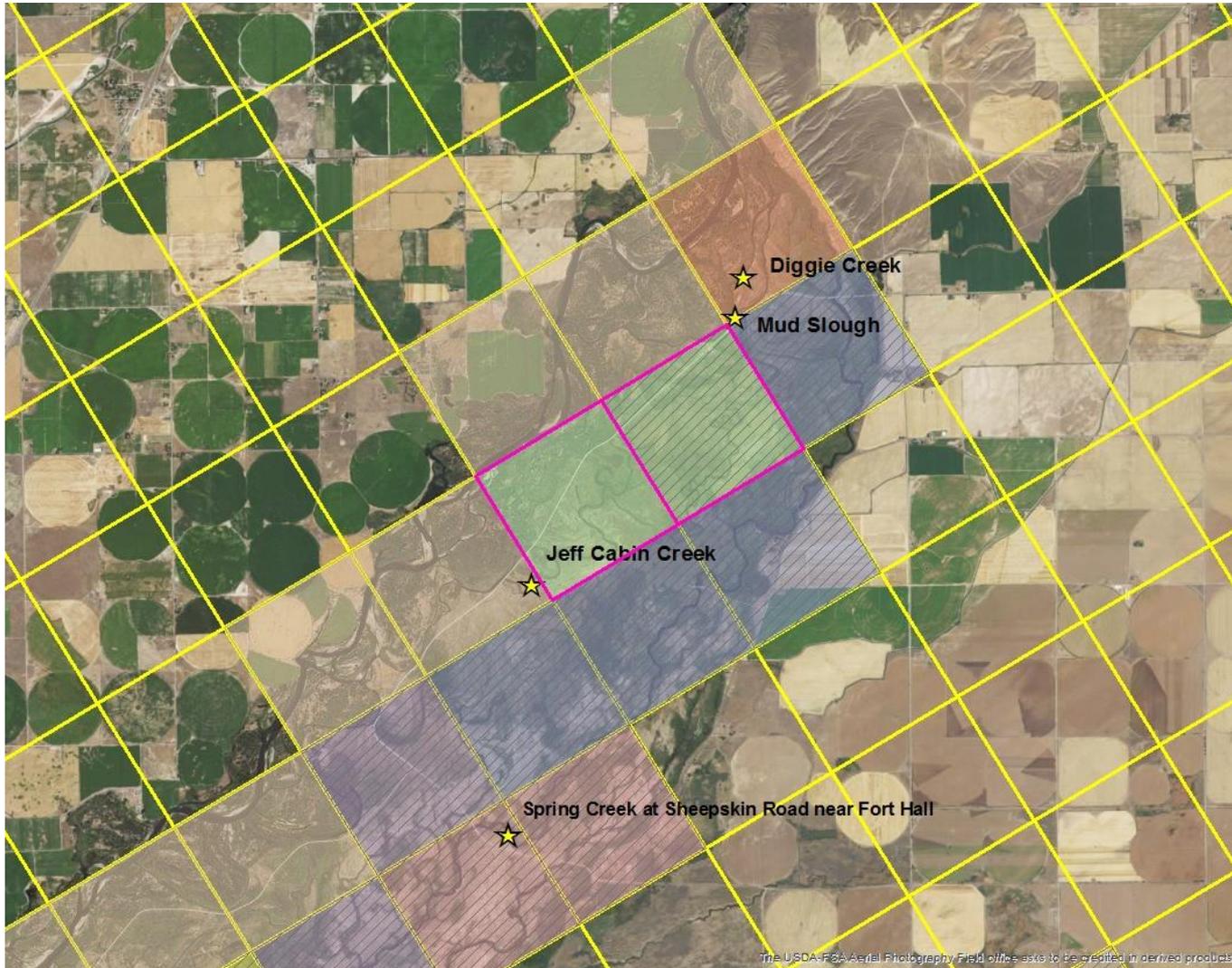


- Shoshone Bannock Tribes measure flow
- Gaining reach
- Tributary to Snake River

Diggee Creek and Mud Slough

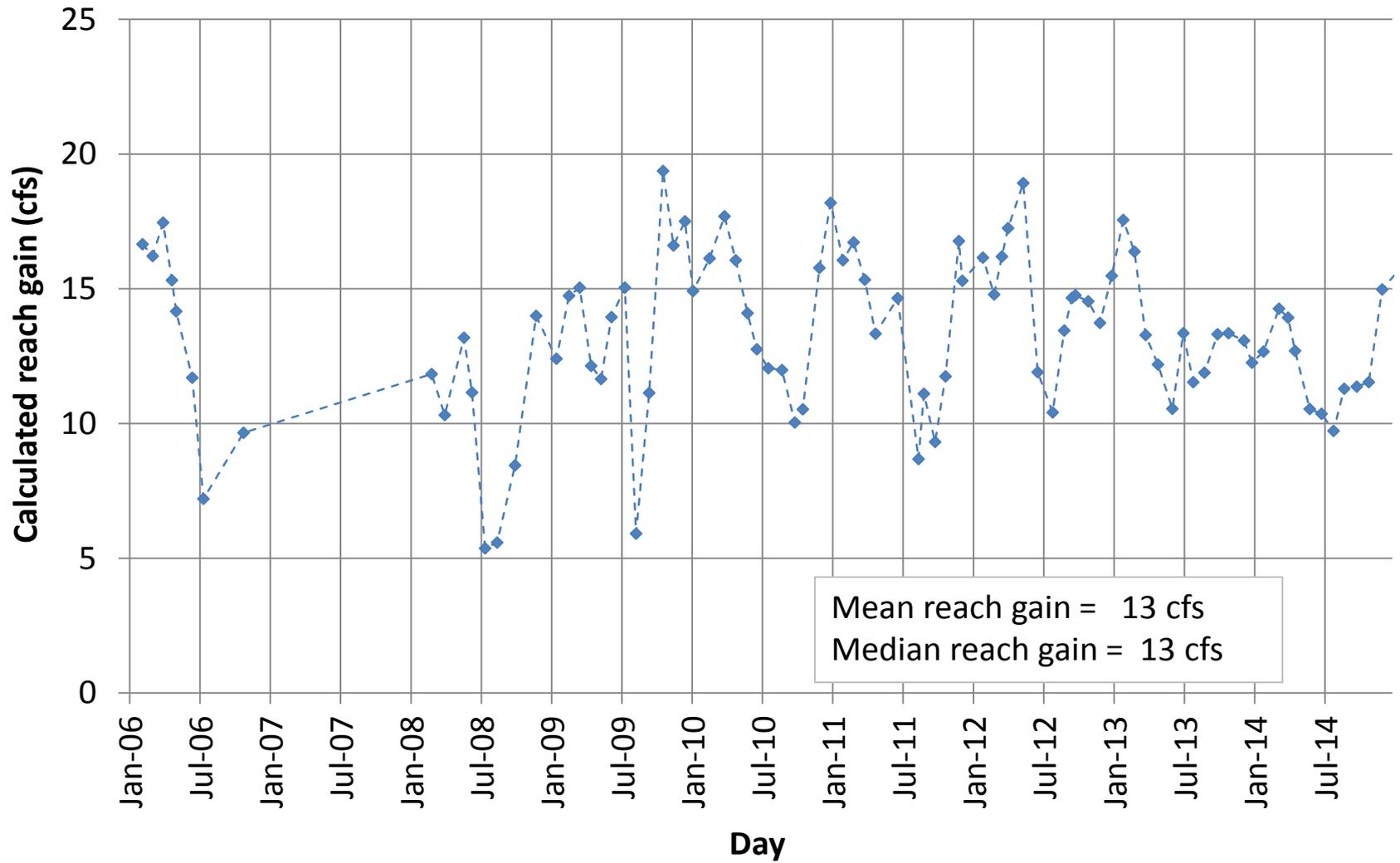


Jeff Cabin Creek

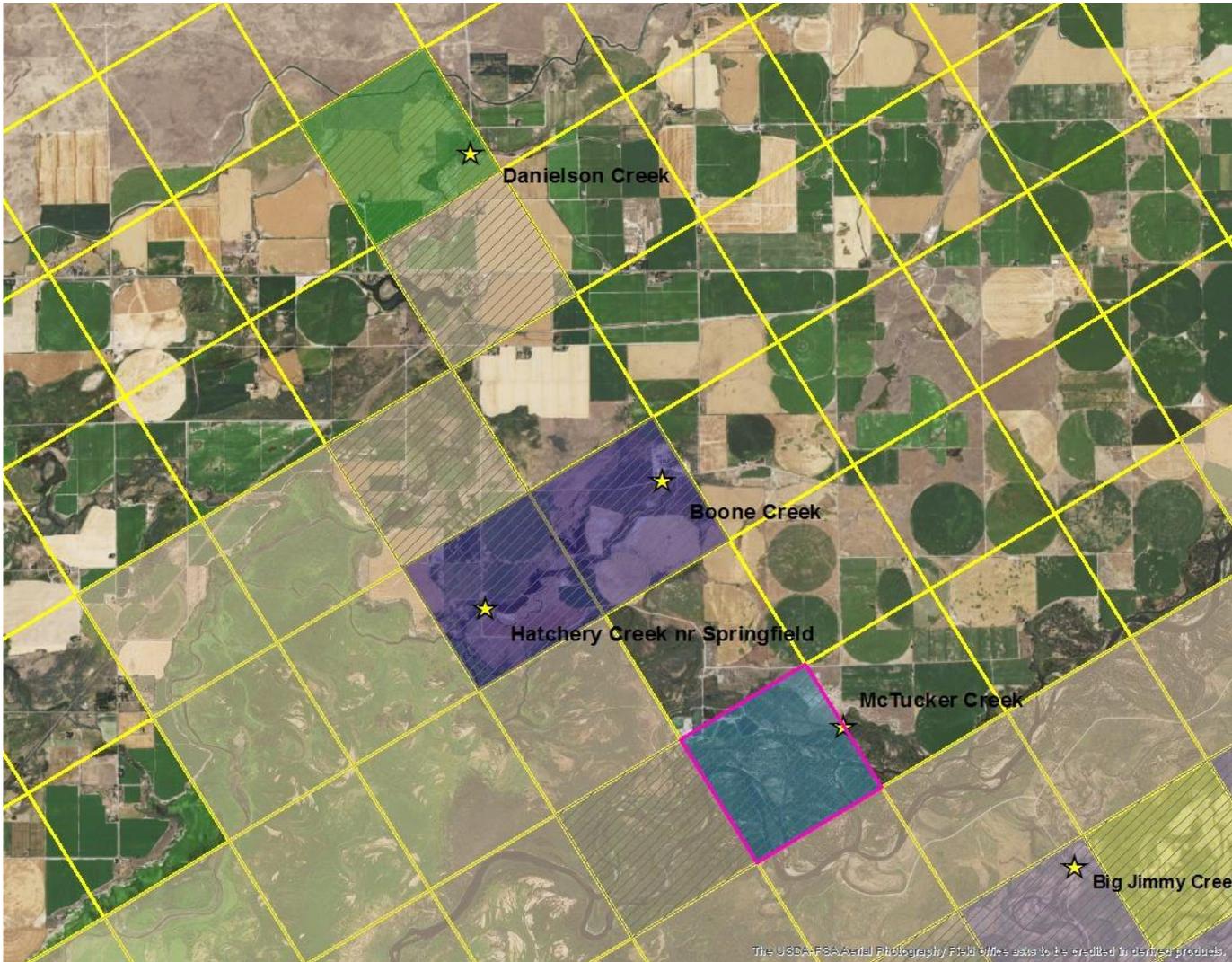


- Shoshone Bannock Tribes measure flow
- Gaining reach
- Tributary to Snake River

Jeff Cabin Creek

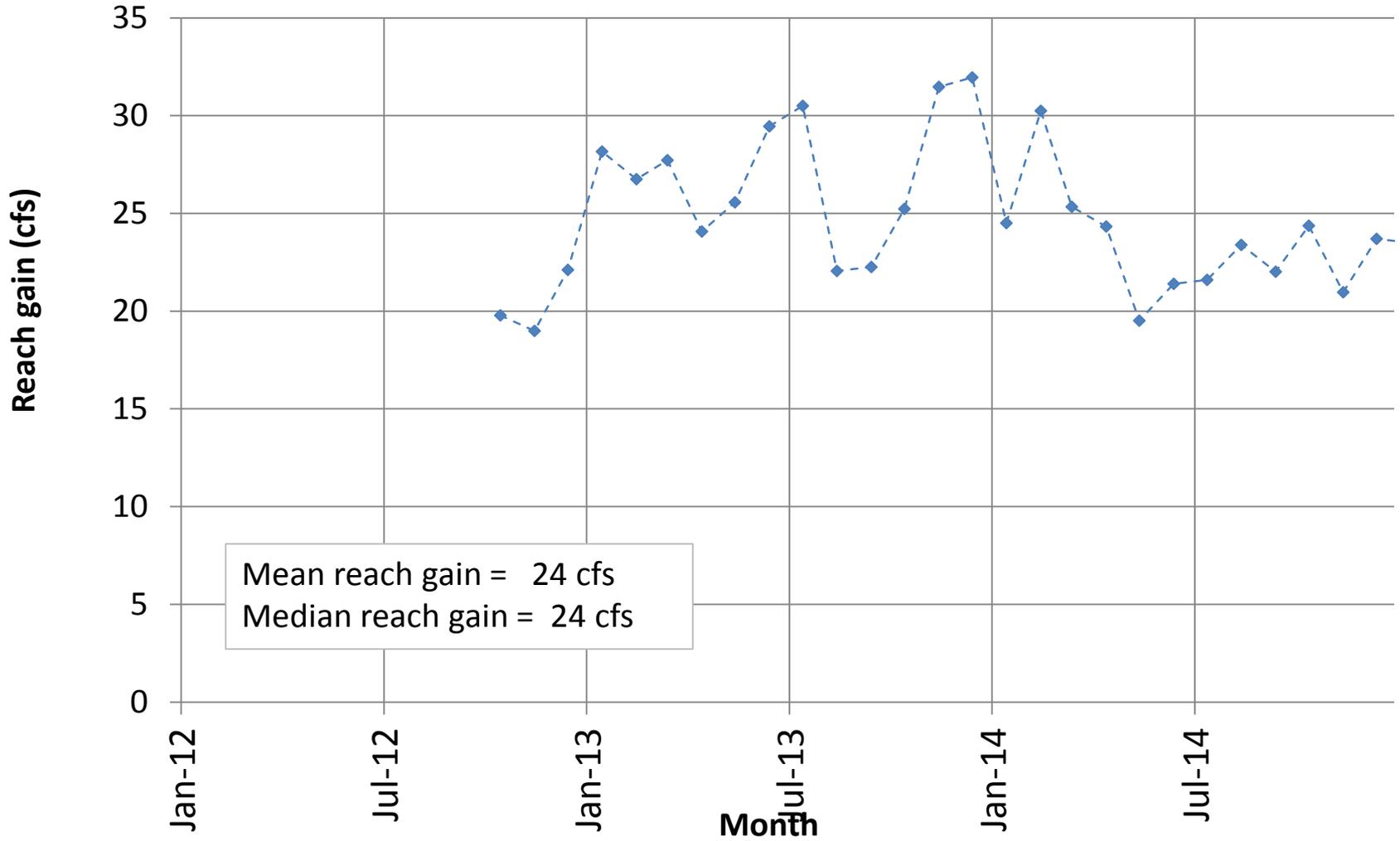


McTucker Creek

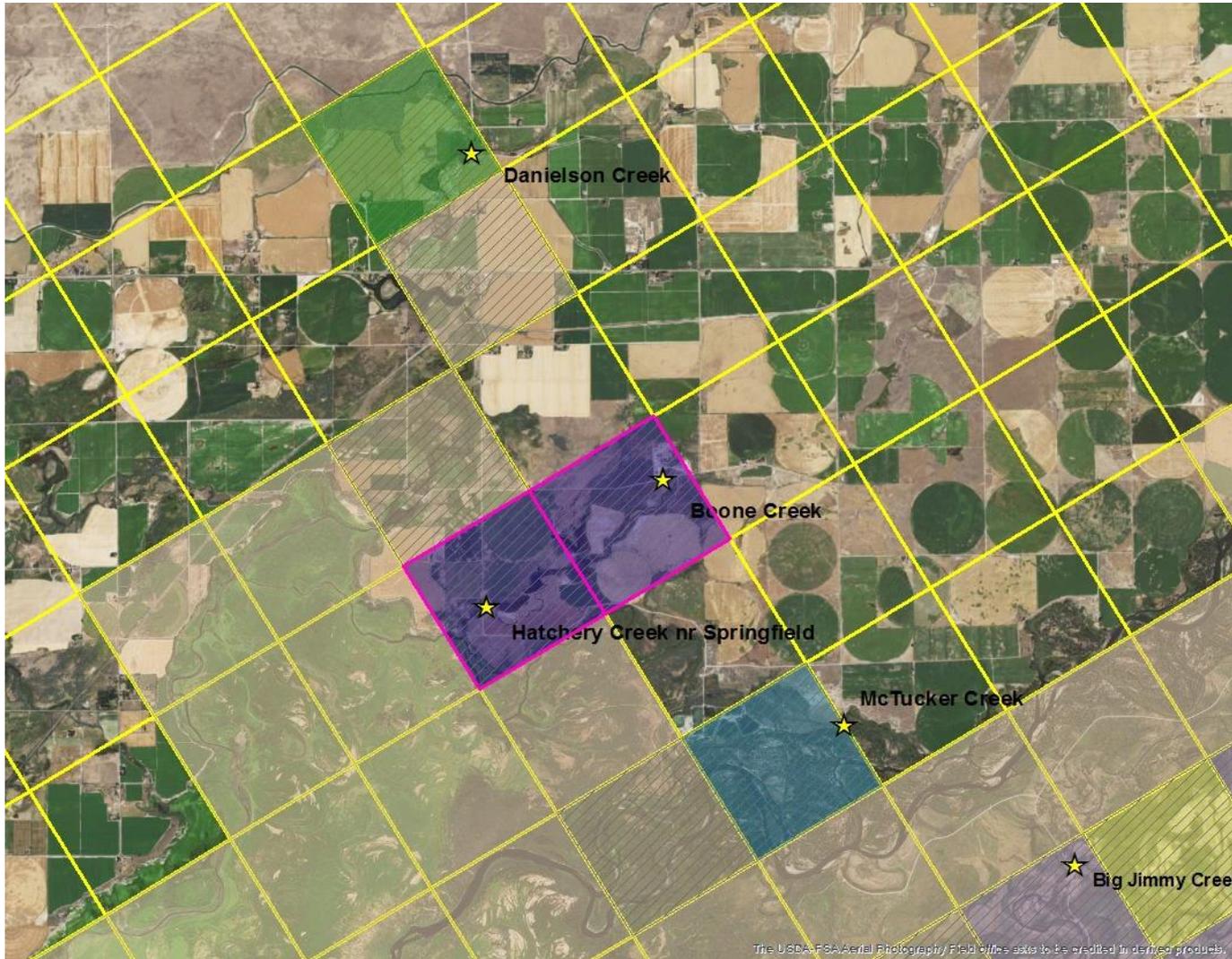


- IPCO continuous gage beginning in 2012
- Gaining reach
- Tributary to American Falls Reservoir
- Unmeasured irrigation diversion of up to 0.7 cfs

McTucker Creek



Hatchery Creek



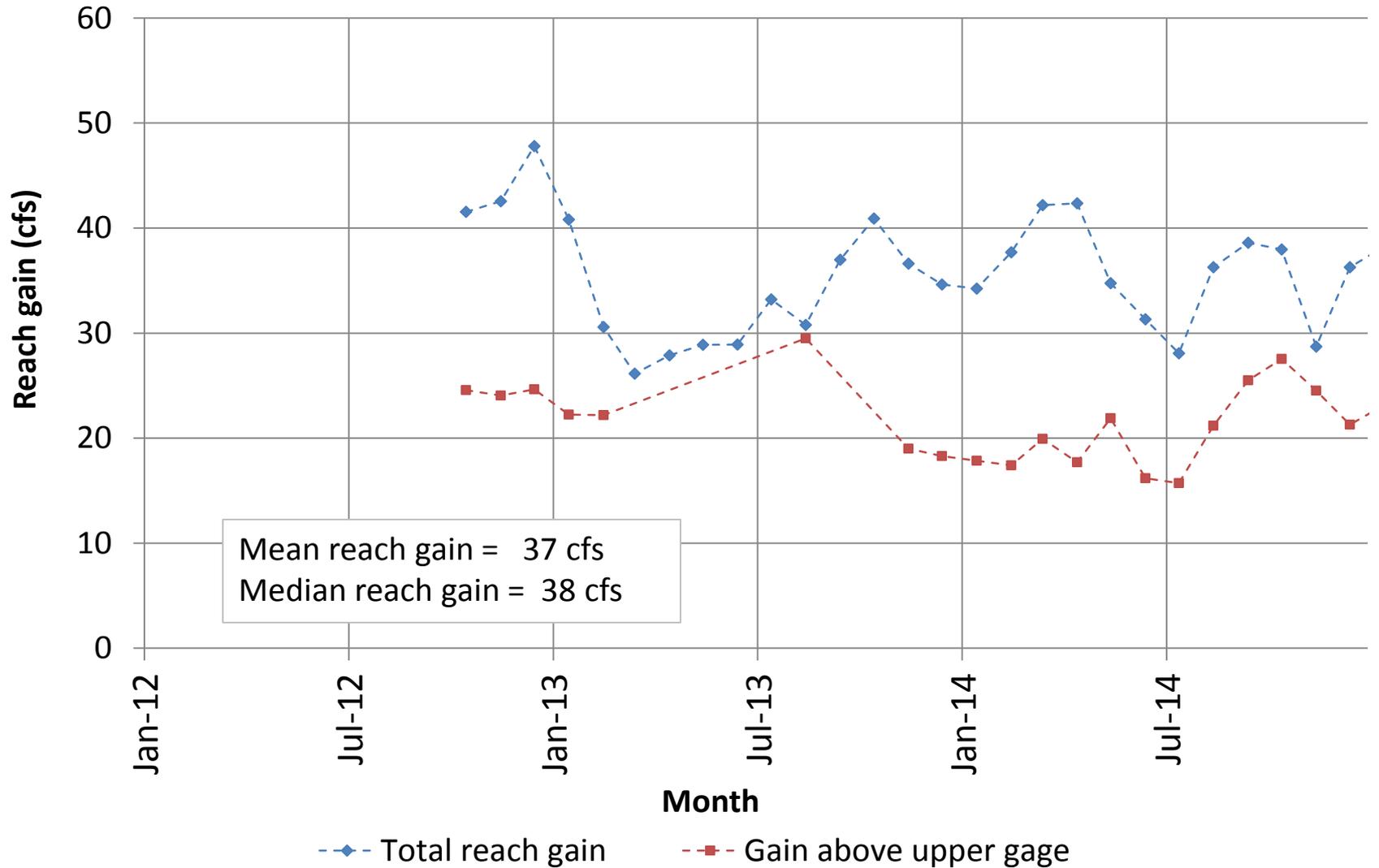
- IPCO continuous gage beginning in 2012

- Gaining reach

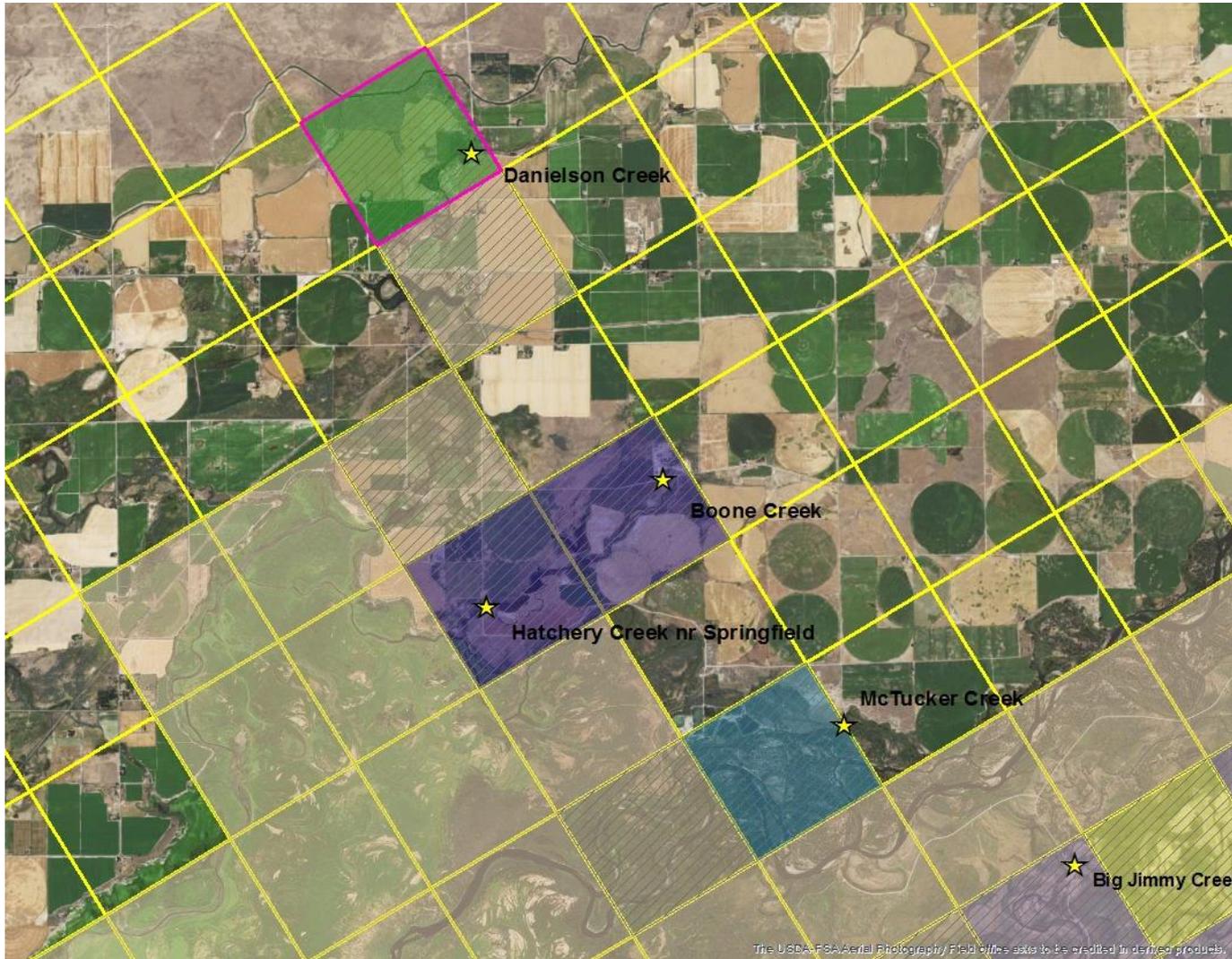
- Tributary to American Falls Reservoir

- Unmeasured irrigation diversions up to 4.52 cfs

Hatchery Creek

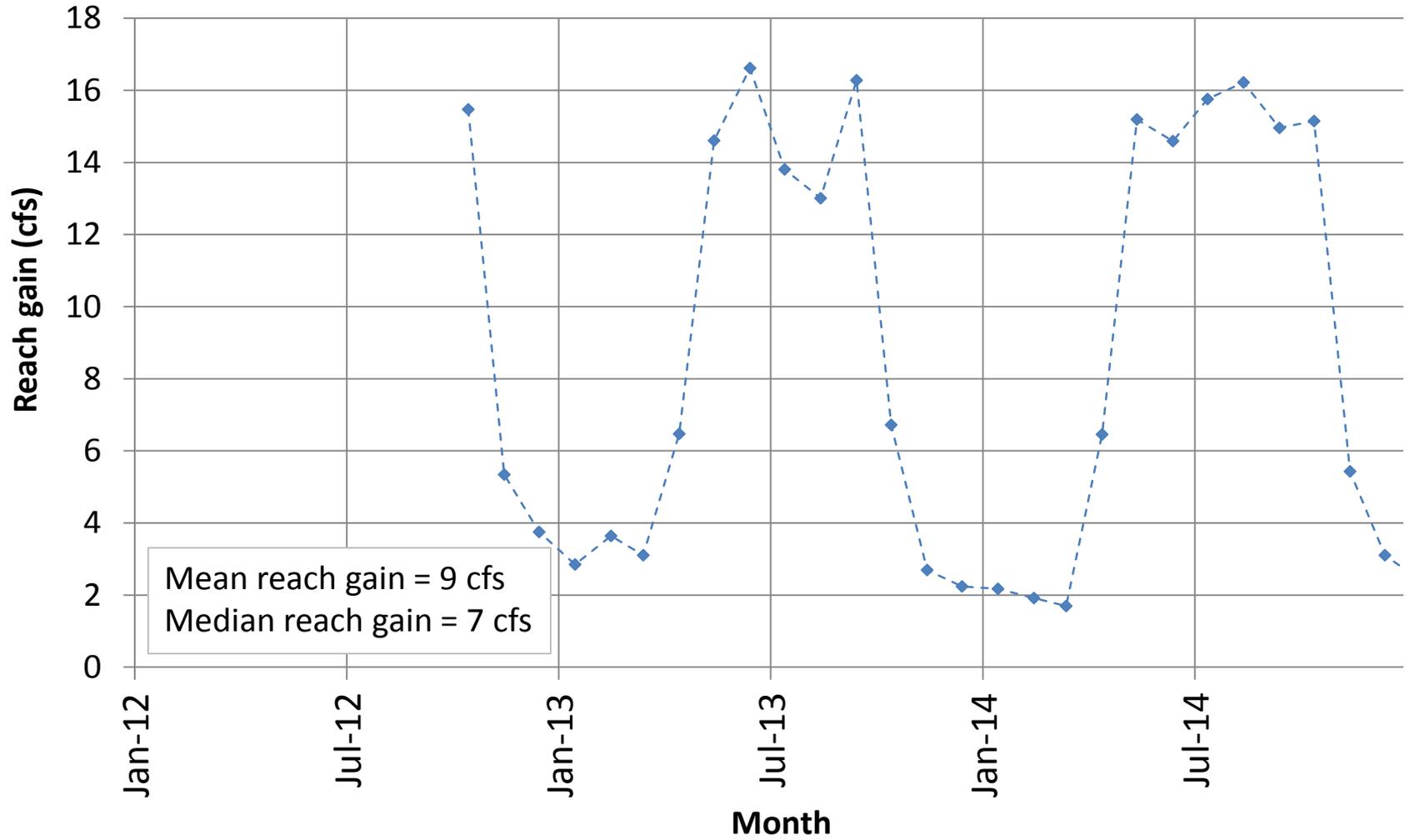


Danielson Creek

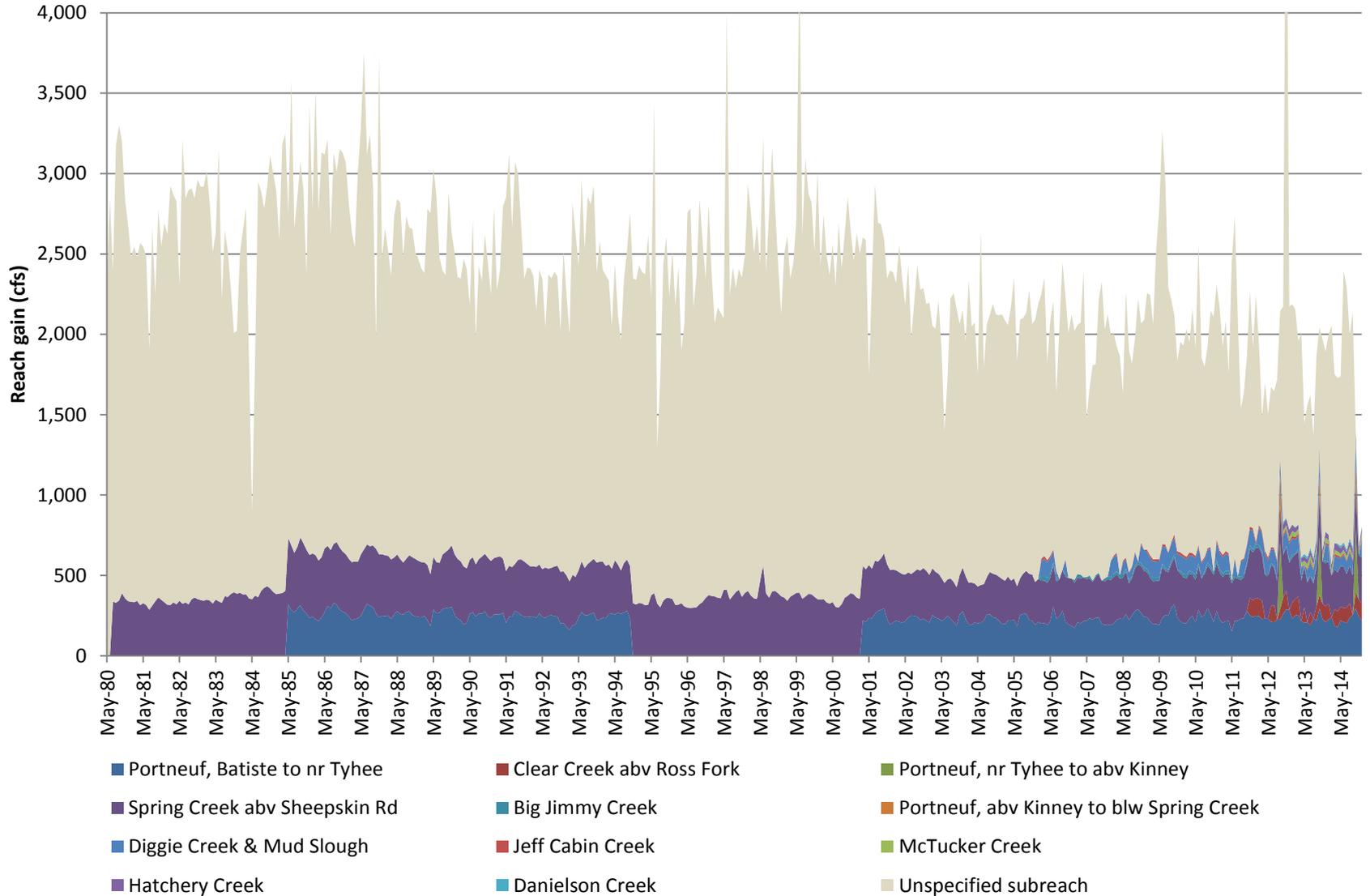


- IPCO continuous gage beginning in 2012
- Gaining reach
- Tributary to American Falls Reservoir
- Less than ½ mile south of Aberdeen Springfield Canal

Danielson Creek



Potential subreach targets



Potential subreach targets

Subreach	Approx. % of near Blackfoot to Neeley reach gain	Number of model cells
Portneuf, Batiste to nr Tyhee	10%	3
Clear Creek abv Ross Fork	4%	4
Portneuf, nr Tyhee to abv Kinney	16%	6
Spring Creek abv Sheepskin Rd	13%	5
Big Jimmy Creek	<1%	2
Portneuf, abv Kinney to blw Spring	6%	19
Diggie Creek & Mud Slough	4%	1
Jeff Cabin Creek	<1%	2
McTucker Creek	1%	1
Hatchery Creek	1%	2
Danielson Creek	<1%	1
Other	43%	90

Potential subreach targets

- Options for discussion
 1. Add 11 subreach targets (approx. 57% of total).
 2. Add 6 subreach targets on Portneuf River and tributaries (approx. 50% of total). Do not add 5 subreach targets for springs tributary to Snake River or American Falls Reservoir (approx. 7% of total).
 3. Consider other subset of subreach targets based on % of total gains or number of cells in subreach.
 4. Add boundary conditions to cells, but do not add subreach targets.